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PM Modi announces 4 astronauts for Gaganyaan: Current status of the mission

The first unmanned Gaganyaan-1 mission, a test flight to check the technology readiness for the final mission, is scheduled to take off by the end of 2024. The manned mission, which will fly a three-membered crew into a low earth orbit at an altitude of 400 km for a period of three days, is scheduled later.

Written by [Anjali Marar](#) , [Anonna Dutt](#)

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Prime Minister Narendra Modi hands over wings to astronauts-designate Shubanshu Shukla, Prashanth Balakrishnan Nair, Angad Prathap and Ajit Krishnan who have been selected to be the astronauts on India's first crewed mission to space 'Gaganyaan Mission', at the Vikram Sarabhai Space Centre (VSSC), in Thiruvananthapuram, Tuesday. (PTI Photo)

Prime Minister Narendra Modi on Tuesday (February 27) **announced the names of the four astronauts** , who would fly to low-Earth orbit as part of the Indian Space Research Organisation's (ISRO) Gaganyaan — the first crewed Indian space mission.

The selected astronauts are Prashanth Balakrishnan Nair, (Group Captain) Angad Prathap, Ajit Krishnan, and Shubanshu Shukla. They are all either wing commanders or group captains with the Indian Air Force (IAF) and have extensive experience working as test pilots.

The announcement came just days after [ISRO](#) said it had successfully tested the human readiness of the cryogenic engine, which will be used on the LVM3 vehicles for all of the Gaganyaan missions.

The Gaganyaan missions include both manned and unmanned missions. The first unmanned Gaganyaan-1 mission, a test flight to check the technology readiness for the final mission, is scheduled to take off by the end of 2024. The manned mission,

which will fly a three-membered crew into a low earth orbit at an altitude of 400 km for a period of three days, is scheduled later.

Here is a look at the current status of Gaganyaan missions.

Human rating of the launch vehicle

ISRO will use its LVM3 rocket for all of the Gaganyaan missions. LVM3, earlier called GSLV-MkIII, is the space agency's most powerful launch vehicle and has flown seven times and never failed. The rocket consists of liquid stage, solid stage, and cryogenic stage.

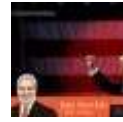
For the manned Gaganyaan mission, ISRO has reconfigured all the components of LVM3 to meet human rating requirements. On February 14, the space agency performed final tests on the rocket's cryogenic engine, known as CE20, which will power LVM3 during the cryogenic stage of the lift-off. The engine successfully passed and was certified for missions that would transport humans into space.

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The 'Vikas' engine to be used in the liquid stage and the solid booster, a part of the solid stage, have already qualified for the missions.

Meanwhile, the special flight engine, which ignites as the rocket lifts off, and is to be used in all Gaganyaan missions has completed the acceptance tests. These tests certify or qualify the test performances of the hardware according to the mission requirement. The technology or development is then applied or used in the final mission.

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Development of crew module and crew escape system

Apart from this, ISRO is also developing technology for the proposed human flight mission. These include the development of life support systems to provide an earth-like environment to the crew in space, crew emergency escape provisions, and evolving crew management aspects for training, recovery, and rehabilitation of the crew.

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Precursor missions are being planned which will demonstrate the technology and preparedness levels before the actual manned Gaganyaan mission.

In October last year, the space agency successfully conducted the first test of a basic crew module and crew escape system (CES). While the crew module is the capsule in which the astronauts will be seated during the Gaganyaan human space flight, CES is a part of the module that ensures “the crew is taken to a safe distance in case of any emergency either at launch pad or during ascent phase,” according to ISRO.

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The test also demonstrated the [success of the deployment of the drogue chutes at a desired angle](#). Drogue chutes play an essential role in stabilising the crew module and reducing its velocity to a safe level during re-entry. They bring the crew module from a height of 17 km at a speed of 150 metres per second to a height of 2.5 km from the surface of the sea at a speed of 63 m/sec

The next month, the space agency began to experiment with a crew module uprighting system — it is used to ensure that the crew module, making a splashdown in the sea after a space mission, stays upright and does not get inverted in the water.

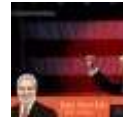
Training of astronauts

The four selected astronauts have completed their generic training at Russia's Yuri Gagarin Cosmonaut Training Centre, where they stayed between February 2020 and March 2021. Their training took place after ISRO Glavkosmos (a subsidiary of

Russian space agency Roscosmos) signed a memorandum of understanding in June 2019.

The astronauts are currently undergoing training at ISRO's astronaut training facility in Bengaluru.

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Speaking to [The Indian Express](#), an ISRO official said: "The training of astronauts is continuous. They are now being trained on subsystem functioning. Various subsystem simulators are created for the astronauts to train on. In fact, they are part of the development process of the crew module design as they can pinpoint what is comfortable, what works etc."

They added, "Other than that the astronauts also have to continuously undergo fitness and psychological training."

One of the four astronauts is also expected to be trained by the American space agency NASA. Bill Nelson, administrator of the space agency, had made the announcement during his visit to [Delhi](#) in 2023. The Indian Express reported at the time the selection would most likely happen from among the four people who are preparing for the Gaganyaan mission.

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Anonna Dutt

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Anonna Dutt is a Principal Correspondent who writes primarily on health at the Indian Express. She reports on myriad topics ranging from the growing burden of non-cc [... Read More](#)

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