**Shukrayaan-1**

Shukrayaan-1 is a planned orbiter to Venus by the Indian Space Research Organisation (ISRO) to study the surface and atmosphere of Venus.

In 2017, money was given to start planning for a new space mission. The people in charge have asked scientists to suggest tools they can use for the mission. Depending on the final plan, the space vehicle can hold up to 100 kilograms (220 pounds) of scientific equipment and use up to 500 watts of power. The vehicle will first orbit Venus in an oval shape. When it gets close to Venus, it will be about 500 kilometers (310 miles) away from it, and when it moves further away, it will be about 60,000 kilometers (37,000 miles) away.

**Objectives**

The mission is interested in studying three main topics:

1. First, it wants to learn about the layers and changes on the surface and under the surface of Venus.
2. Second, it will look at the gases and movements in the atmosphere of Venus, as well as how they change.
3. third, it will observe how the Sun's energy and the particles it sends out interact with the atmosphere of Venus, while also studying the atmosphere's makeup, movement, and changes.

**payload:**

The science payload would have a mass of 100 kg (220 lb) and would consist of instruments from India and other countries. As of December 2019, 16 Indian and 7 international payloads have been shortlisted. Some of them will be selected.

**Indian instruments:**

* Venus L&S-Band SAR
* VARTISS (HF radar)
* VSEAM (Surface Emissivity)
* VTC (Thermal Camera)
* VCMC (Cloud Monitoring)
* LIVE (Lightning Sensor)[31]
* VASP (Spectro Polarimeter)
* SPAV (Solar occultation photometry)
* NAVA (Airglow imager)

**International instruments:**

* VIRAL (Venus InfraRed Atmospheric gases Linker)
* IVOLGA: A laser heterodyne NIR spectrometer