**"TO STUDY ABOUT SPACE EXPLORATION"**

**A PROJECT WORK SUBMITTED FOR THE PARTIAL FULFILLMENT OF THE REQUIREMENT FOR THE GRADE 11 SCIENCE IN PHYSICS**

**By**

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**CERTIFICATE OF APPROVAL**

The project work entitled "STUDY OF SPACE EXPLORATION" by Mr. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ under the supervision of Mr. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_Of\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ , Nepal, is hereby submitted for the partial fulfillment of requirement of Physics in Grade 11. This project work has not been submitted in any other school or institution previously for the award of Grade 11.

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**DECLARATION**

I, ­­­­­­­­­­­­\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ hereby declare that the project work entitled, "STUDY OF SPACE EXPLORATION" under the supervision of Mr. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_Of\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ , Nepal, presented herein is genuine work done originally by me and has not been published or submitted elsewhere for the requirement of any degree program. Any literature, data or works done by others and cited in this project work has been given due acknowledgement and listed in the reference section.

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**TABLE OF CONTENTS**

**Chapter 1: Introduction to Space Exploration**

**Chapter 2: History of Space Exploration**

**Chapter 3: Targets of Space Exploration**

**Chapter 4: Future of Space Exploration**

**Chapter 5: Conclusion**

**Chapter 6: Acknowledgement**

**Chapter 7: References**

1. **Introduction to Space Exploration:-**

**Space exploration** is the use of [astronomy](https://en.wikipedia.org/wiki/Astronomy) and [space technology](https://en.wikipedia.org/wiki/Space_technology) to explore [outer space](https://en.wikipedia.org/wiki/Outer_space). While the exploration of space is carried out mainly by [astronomers](https://en.wikipedia.org/wiki/Astronomer) with [telescopes](https://en.wikipedia.org/wiki/Telescope), its physical exploration is conducted both by [uncrewed robotic space probes](https://en.wikipedia.org/wiki/Robotic_spacecraft) and [human spaceflight](https://en.wikipedia.org/wiki/Human_spaceflight). Space exploration, like its classical form [astronomy](https://en.wikipedia.org/wiki/Astronomy), is one of the main sources for [space science](https://en.wikipedia.org/wiki/Space_science).

While the observation of objects in space, known as [astronomy](https://en.wikipedia.org/wiki/Astronomy), predates reliable [recorded history](https://en.wikipedia.org/wiki/Recorded_history), it was the development of large and relatively efficient [rockets](https://en.wikipedia.org/wiki/Rocket) during the mid-twentieth century that allowed physical space exploration to become a reality. The world's first large-scale experimental rocket program was [Opel-RAK](https://en.wikipedia.org/wiki/Opel-RAK) under the leadership of [Fritz von Opel](https://en.wikipedia.org/wiki/Fritz_von_Opel) and [Max Valier](https://en.wikipedia.org/wiki/Max_Valier) during the late 1920s leading to the first crewed rocket cars and rocket planes, which paved the way for the Nazi era V2 program and US and Soviet activities from 1950 onwards. The Opel-RAK program and the spectacular public demonstrations of ground and air vehicles drew large crowds, as well as caused global public excitement as so-called "Rocket Rumble" and had a large long-lasting impact on later spaceflight pioneers like [Wernher von Braun](https://en.wikipedia.org/wiki/Wernher_von_Braun). Common rationales for exploring space include advancing scientific research, national prestige, uniting different nations, ensuring the future survival of humanity, and developing military and strategic advantages against other countries.

1. **History of Space Exploration:-**

### First telescopes;

### The first [telescope](https://en.wikipedia.org/wiki/Telescope) is said to have been invented in 1608 in the [Netherlands](https://en.wikipedia.org/wiki/Netherlands) by an [eyeglass](https://en.wikipedia.org/wiki/Eyeglass) maker named [Hans Lippershey](https://en.wikipedia.org/wiki/Hans_Lippershey), but their first uses in astronomy was by [Galileo Galilei](https://en.wikipedia.org/wiki/Galileo_Galilei) in 1609. In 1668 [Isaac Newton](https://en.wikipedia.org/wiki/Isaac_Newton) built [his own](https://en.wikipedia.org/wiki/Newton%27s_reflector) [reflecting telescope](https://en.wikipedia.org/wiki/Reflecting_telescope), the first fully functional telescope of this kind, and a landmark for future developments due to its superior features over the previous [Galilean telescope](https://en.wikipedia.org/wiki/Refracting_telescope#Galilean_telescope).

### First outer space flights

[](https://en.wikipedia.org/wiki/File:Vostok_spacecraft.jpg)

Model of Vostok spacecraft

[](https://en.wikipedia.org/wiki/File:Apollo_CSM_lunar_orbit.jpg)

Apollo CSM in lunar orbit

[MW 18014](https://en.wikipedia.org/wiki/MW_18014) was a German [V-2 rocket](https://en.wikipedia.org/wiki/V-2_rocket) test launch that took place on 20 June 1944, at the [Peenemünde Army Research Center](https://en.wikipedia.org/wiki/Peenem%C3%BCnde_Army_Research_Center) in [Peenemünde](https://en.wikipedia.org/wiki/Peenem%C3%BCnde). It was the first man-made object to reach [outer space](https://en.wikipedia.org/wiki/Outer_space), attaining an [apogee](https://en.wikipedia.org/wiki/Apogee) of 176 kilometers, which is well above the [Kármán line](https://en.wikipedia.org/wiki/K%C3%A1rm%C3%A1n_line). It was a vertical test launch. Although the rocket reached space, it did not reach [orbital velocity](https://en.wikipedia.org/wiki/Orbital_speed), and therefore returned to Earth in an impact, becoming the first [sub-orbital spaceflight](https://en.wikipedia.org/wiki/Sub-orbital_spaceflight).

### First object in orbit:

### The first successful orbital launch was of the [Soviet](https://en.wikipedia.org/wiki/Soviet_Union) uncrewed [Sputnik 1](https://en.wikipedia.org/wiki/Sputnik_1) ("Satellite 1") mission on 4 October 1957. The satellite weighed about 83 kg (183 lb), and is believed to have orbited Earth at a height of about 250 km (160 mi). It had two radio transmitters (20 and 40 MHz), which emitted "beeps" that could be heard by radios around the globe.

### First human outer space flight:

### The first successful human spaceflight was [Vostok 1](https://en.wikipedia.org/wiki/Vostok_1) ("East 1"), carrying the 27-year-old Russian [cosmonaut](https://en.wikipedia.org/wiki/Cosmonaut), [Yuri Gagarin](https://en.wikipedia.org/wiki/Yuri_Gagarin), on 12 April 1961. The spacecraft completed one orbit around the globe, lasting about 1 hour and 48 minutes. Gagarin's flight resonated around the world; it was a demonstration of the advanced [Soviet space program](https://en.wikipedia.org/wiki/Soviet_space_program) and it opened an entirely new era in space exploration: [human spaceflight](https://en.wikipedia.org/wiki/Human_spaceflight).

### First astronomical body space explorations:

### The first artificial object to reach another celestial body was [Luna 2](https://en.wikipedia.org/wiki/Luna_2) reaching the [Moon](https://en.wikipedia.org/wiki/Moon) in 1959. The first [soft landing](https://en.wikipedia.org/wiki/Soft_landing_(aeronautics)) on another celestial body was performed by [Luna 9](https://en.wikipedia.org/wiki/Luna_9) landing on the Moon on 3 February 1966. [Luna 10](https://en.wikipedia.org/wiki/Luna_10) became the first artificial satellite of the Moon, entering in a lunar orbit on 3 April 1966.

### First space station

### [Salyut 1](https://en.wikipedia.org/wiki/Salyut_1) was the first [space station](https://en.wikipedia.org/wiki/Space_station) of any kind, launched into [low Earth orbit](https://en.wikipedia.org/wiki/Low_Earth_orbit) by the [Soviet Union](https://en.wikipedia.org/wiki/Soviet_Union) on 19 April 1971. The [International Space Station](https://en.wikipedia.org/wiki/International_Space_Station) is currently the only fully functional space station, inhabited continuously since the year 2000.

### First interstellar space flight

### [Voyager 1](https://en.wikipedia.org/wiki/Voyager_1) became the first human-made object to [leave the Solar System](https://en.wikipedia.org/wiki/List_of_artificial_objects_leaving_the_Solar_System) into [interstellar space](https://en.wikipedia.org/wiki/Outer_space#Interstellar_space) on 25 August 2012. The probe passed the [heliopause](https://en.wikipedia.org/wiki/Heliopause_(astronomy)) at 121 [AU](https://en.wikipedia.org/wiki/Astronomical_unit) to enter [interstellar space](https://en.wikipedia.org/wiki/Interstellar_medium).

### Farthest from Earth

### The [Apollo 13](https://en.wikipedia.org/wiki/Apollo_13) flight passed the [far side of the Moon](https://en.wikipedia.org/wiki/Far_side_of_the_Moon) at an altitude of 254 kilometers (158 miles; 137 nautical miles) above the lunar surface, and 400,171 km (248,655 mi) from Earth, marking the [record](https://en.wikipedia.org/wiki/List_of_spaceflight_records) for the farthest humans have ever traveled from Earth in 1970.

### As of 26 November 2022 [Voyager 1](https://en.wikipedia.org/wiki/Voyager_1) was at a distance of 159 AU (23.8 billion km; 14.8 billion mi) from Earth. It is the most distant human-made object from Earth.

### [GN-z11](https://en.wikipedia.org/wiki/GN-z11) is the [most distant](https://en.wikipedia.org/wiki/List_of_the_most_distant_astronomical_objects) known object from Earth, reported as 13.4 billion [light-years](https://en.wikipedia.org/wiki/Light-year) away.

1. **Targets of Space Exploration:-**

### The Sun

### The [Sun](https://en.wikipedia.org/wiki/Sun) is a major focus of space exploration. Being above the atmosphere in particular and Earth's magnetic field gives access to the solar wind and infrared and ultraviolet radiations that cannot reach Earth's surface. The Sun generates most [space weather](https://en.wikipedia.org/wiki/Space_weather), which can affect power generation and transmission systems on Earth and interfere with, and even damage, satellites and space probes. Numerous spacecraft dedicated to observing the Sun, beginning with the [Apollo Telescope Mount](https://en.wikipedia.org/wiki/Apollo_Telescope_Mount), have been launched and still others have had solar observation as a secondary objective. [Parker Solar Probe](https://en.wikipedia.org/wiki/Parker_Solar_Probe), launched in 2018, will approach the Sun to within 1/9th the orbit of Mercury.

### Mercury

### [Mercury](https://en.wikipedia.org/wiki/Mercury_(planet)) remains the least explored of the [Terrestrial planets](https://en.wikipedia.org/wiki/Terrestrial_planets). As of May 2013, the [Mariner 10](https://en.wikipedia.org/wiki/Mariner_10) and [MESSENGER](https://en.wikipedia.org/wiki/MESSENGER) missions have been the only missions that have made close observations of Mercury. MESSENGER entered orbit around Mercury in March 2011, to further investigate the observations made by Mariner 10 in 1975 (Munsell, 2006b). A third mission to Mercury, scheduled to arrive in 2025, [BepiColombo](https://en.wikipedia.org/wiki/BepiColombo) is to include two [probes](https://en.wikipedia.org/wiki/Space_probe). BepiColombo is a joint mission between Japan and the [European Space Agency](https://en.wikipedia.org/wiki/European_Space_Agency). MESSENGER and BepiColombo are intended to gather complementary data to help scientists understand many of the mysteries discovered by Mariner 10's [flybys](https://en.wikipedia.org/wiki/Gravitational_slingshot).

### Venus

### [Venus](https://en.wikipedia.org/wiki/Venus) was the first target of interplanetary flyby and lander missions and, despite one of the most hostile surface environments in the Solar System, has had more landers sent to it (nearly all from the Soviet Union) than any other planet in the Solar System. The first flyby was the 1961 [Venera 1](https://en.wikipedia.org/wiki/Venera_1), though the 1962 [Mariner 2](https://en.wikipedia.org/wiki/Mariner_2) was the first flyby to successfully return data. Mariner 2 has been followed by several other flybys by multiple space agencies often as part of missions using a Venus flyby to provide a [gravitational assist](https://en.wikipedia.org/wiki/Gravity_assist) en route to other celestial bodies.

### Earth

### Space exploration has been used as a tool to understand Earth as a celestial object. Orbital missions can provide data for Earth that can be difficult or impossible to obtain from a purely ground-based point of reference.

### For example, the existence of the [Van Allen radiation belts](https://en.wikipedia.org/wiki/Van_Allen_radiation_belt) was unknown until their discovery by the United States' first artificial satellite, [Explorer 1](https://en.wikipedia.org/wiki/Explorer_1). These belts contain radiation trapped by Earth's magnetic fields, which currently renders construction of habitable space stations above 1000 km impractical.

#### **Moon**

#### The [Moon](https://en.wikipedia.org/wiki/Moon) was the first celestial body to be the object of space exploration. It holds the distinctions of being the first remote celestial object to be flown by, orbited, and landed upon by spacecraft, and the only remote celestial object ever to be visited by humans.

### Mars

### The exploration of [Mars](https://en.wikipedia.org/wiki/Mars) has been an important part of the space exploration programs of the Soviet Union (later Russia), the United States, Europe, Japan and India. Dozens of [robotic spacecraft](https://en.wikipedia.org/wiki/Robotic_spacecraft), including [orbiters](https://en.wikipedia.org/wiki/Orbiter), [landers](https://en.wikipedia.org/wiki/Lander_(spacecraft)), and [rovers](https://en.wikipedia.org/wiki/Rover_(space_exploration)), have been launched toward Mars since the 1960s. These missions were aimed at gathering data about current conditions and answering questions about the history of Mars. The questions raised by the scientific community are expected to not only give a better appreciation of the red planet but also yield further insight into the past, and possible future, of Earth.

#### **Phobos**

#### The Russian space mission [Fobos-Grunt](https://en.wikipedia.org/wiki/Fobos-Grunt), which launched on 9 November 2011 experienced a failure leaving it stranded in [low Earth orbit](https://en.wikipedia.org/wiki/Low_Earth_orbit).[[43]](https://en.wikipedia.org/wiki/Space_exploration#cite_note-noburn-43) It was to begin exploration of the [Phobos](https://en.wikipedia.org/wiki/Phobos_(moon)) and Martian circumterrestrial orbit, and study whether the moons of Mars, or at least Phobos, could be a "trans-shipment point" for spaceships traveling to Mars.

### Asteroids

### Until the advent of [space travel](https://en.wikipedia.org/wiki/Spaceflight), objects in the [asteroid belt](https://en.wikipedia.org/wiki/Asteroid_belt) were merely pinpricks of light in even the largest telescopes, their shapes and terrain remaining a mystery. Several asteroids have now been visited by probes, the first of which was [Galileo](https://en.wikipedia.org/wiki/Galileo_(spacecraft)), which flew past two: [951 Gaspra](https://en.wikipedia.org/wiki/951_Gaspra) in 1991, followed by [243 Ida](https://en.wikipedia.org/wiki/243_Ida) in 1993. Both of these lay near enough to Galileo's planned trajectory to Jupiter that they could be visited at acceptable cost.

### Jupiter

### The exploration of [Jupiter](https://en.wikipedia.org/wiki/Jupiter) has consisted solely of a number of automated NASA spacecraft visiting the planet since 1973. A large majority of the missions have been "flybys", in which detailed observations are taken without the probe landing or entering orbit; such as in [Pioneer](https://en.wikipedia.org/wiki/Pioneer_program) and [Voyager](https://en.wikipedia.org/wiki/Voyager_program) programs. The [Galileo](https://en.wikipedia.org/wiki/Galileo_spacecraft) and [Juno](https://en.wikipedia.org/wiki/Juno_spacecraft) spacecraft are the only spacecraft to have entered the planet's orbit. As Jupiter is believed to have only a relatively small rocky core and no real solid surface, a landing mission is precluded.

### Saturn

### [Saturn](https://en.wikipedia.org/wiki/Saturn) has been explored only through uncrewed spacecraft launched by NASA, including one mission ([Cassini–Huygens](https://en.wikipedia.org/wiki/Cassini%E2%80%93Huygens)) planned and executed in cooperation with other space agencies. These missions consist of flybys in 1979 by [Pioneer 11](https://en.wikipedia.org/wiki/Pioneer_11), in 1980 by [Voyager 1](https://en.wikipedia.org/wiki/Voyager_1), in 1982 by [Voyager 2](https://en.wikipedia.org/wiki/Voyager_2) and an orbital mission by the Cassini spacecraft, which lasted from 2004 until 2017.

### Uranus

### The exploration of [Uranus](https://en.wikipedia.org/wiki/Uranus) has been entirely through the [Voyager 2](https://en.wikipedia.org/wiki/Voyager_2) spacecraft, with no other visits currently planned. Given its [axial tilt](https://en.wikipedia.org/wiki/Axial_tilt) of 97.77°, with its polar regions exposed to sunlight or darkness for long periods, scientists were not sure what to expect at Uranus. The closest approach to Uranus occurred on 24 January 1986. Voyager 2 studied the planet's unique atmosphere and [magnetosphere](https://en.wikipedia.org/wiki/Magnetosphere). Voyager 2 also examined its [ring system](https://en.wikipedia.org/wiki/Rings_of_Uranus) and the [moons of Uranus](https://en.wikipedia.org/wiki/Moons_of_Uranus) including all five of the previously known moons, while discovering an additional ten previously unknown moons.

### Neptune

### The exploration of Neptune began with 25 August 1989 [Voyager 2](https://en.wikipedia.org/wiki/Voyager_2) flyby, the sole visit to the system as of 2023. The possibility of a [Neptune Orbiter](https://en.wikipedia.org/wiki/Neptune_Orbiter) has been discussed, but no other missions have been given serious thought.

### Although the extremely uniform appearance of Uranus during Voyager 2's visit in 1986 had led to expectations that Neptune would also have few visible atmospheric phenomena, the spacecraft found that Neptune had obvious banding, visible clouds, [auroras](https://en.wikipedia.org/wiki/Aurora_(astronomy)), and even a conspicuous [anticyclone storm system](https://en.wikipedia.org/wiki/Great_Dark_Spot) rivaled in size only by Jupiter's [Great Red Spot](https://en.wikipedia.org/wiki/Great_Red_Spot).

### Pluto

### The [dwarf planet](https://en.wikipedia.org/wiki/Dwarf_planet) Pluto presents significant challenges for spacecraft because of its great distance from Earth (requiring high velocity for reasonable trip times) and small mass (making capture into orbit very difficult at present). [Voyager 1](https://en.wikipedia.org/wiki/Voyager_1) could have visited Pluto, but controllers opted instead for a close flyby of Saturn's moon Titan, resulting in a trajectory incompatible with a Pluto flyby. [Voyager 2](https://en.wikipedia.org/wiki/Voyager_2) never had a plausible trajectory for reaching Pluto.

### Kuiper Belt Objects

### The New Horizons mission also did a flyby of the small planetesimal [Arrokoth](https://en.wikipedia.org/wiki/Arrokoth), in the [Kuiper belt](https://en.wikipedia.org/wiki/Kuiper_belt), in 2019. This was its first extended mission

### Comets

### Although many comets have been studied from Earth sometimes with centuries-worth of observations, only a few comets have been closely visited. In 1985, the [International Cometary Explorer](https://en.wikipedia.org/wiki/International_Cometary_Explorer) conducted the first comet fly-by ([21P/Giacobini-Zinner](https://en.wikipedia.org/wiki/21P/Giacobini-Zinner)) before joining the [Halley Armada](https://en.wikipedia.org/wiki/Halley_Armada) studying the famous comet. The [Deep Impact probe](https://en.wikipedia.org/wiki/Deep_Impact_(spacecraft)) smashed into [9P/Tempel](https://en.wikipedia.org/wiki/9P/Tempel) to learn more about its structure and composition and the [Stardust mission](https://en.wikipedia.org/wiki/Stardust_(spacecraft)) returned samples of another comet's tail. The [Philae lander](https://en.wikipedia.org/wiki/Philae_(spacecraft)) successfully landed on [Comet Churyumov–Gerasimenko](https://en.wikipedia.org/wiki/67P/Churyumov%E2%80%93Gerasimenko) in 2014 as part of the broader [Rosetta mission](https://en.wikipedia.org/wiki/Rosetta_(spacecraft)).

### Deep space exploration

### Deep space exploration is the branch of [astronomy](https://en.wikipedia.org/wiki/Astronomy), [astronautics](https://en.wikipedia.org/wiki/Astronautics) and [space technology](https://en.wikipedia.org/wiki/Space_technology) that is involved with the exploration of distant regions of outer space. Physical exploration of space is conducted both by [human spaceflights](https://en.wikipedia.org/wiki/Human_spaceflight) (deep-space astronautics) and by [robotic spacecraft](https://en.wikipedia.org/wiki/Robotic_spacecraft).

1. **Future of Space Exploration:-**

### Breakthrough Starshot:

### Breakthrough Starshot is a research and engineering project by the [Breakthrough Initiatives](https://en.wikipedia.org/wiki/Breakthrough_Initiatives) to develop a proof-of-concept fleet of [light sail](https://en.wikipedia.org/wiki/Light_sail) spacecraft named StarChip, to be capable of making the journey to the [Alpha Centauri](https://en.wikipedia.org/wiki/Alpha_Centauri) star system 4.37 [light-years](https://en.wikipedia.org/wiki/Light-years) away. It was founded in 2016 by [Yuri Milner](https://en.wikipedia.org/wiki/Yuri_Milner), [Stephen Hawking](https://en.wikipedia.org/wiki/Stephen_Hawking), and [Mark Zuckerberg](https://en.wikipedia.org/wiki/Mark_Zuckerberg).

### Asteroids:

### An article in science magazine [Nature](https://en.wikipedia.org/wiki/Nature_(journal)) suggested the use of asteroids as a gateway for space exploration, with the ultimate destination being Mars. In order to make such an approach viable, three requirements need to be fulfilled: first, "a thorough asteroid survey to find thousands of nearby bodies suitable for astronauts to visit"; second, "extending flight duration and distance capability to ever-increasing ranges out to Mars"; and finally, "developing better robotic vehicles and tools to enable astronauts to explore an asteroid regardless of its size, shape or spin".

### James Webb Space Telescope:

### The James Webb Space Telescope (JWST or "Webb") is a [space telescope](https://en.wikipedia.org/wiki/Space_telescope) that is the successor to the [Hubble Space Telescope](https://en.wikipedia.org/wiki/Hubble_Space_Telescope). The JWST will provide greatly improved resolution and sensitivity over the Hubble, and will enable a broad range of investigations across the fields of [astronomy](https://en.wikipedia.org/wiki/Astronomy) and [cosmology](https://en.wikipedia.org/wiki/Cosmology), including observing some of the most distant events and objects in the [universe](https://en.wikipedia.org/wiki/Universe), such as the [formation of the first galaxies](https://en.wikipedia.org/wiki/Galaxy_formation_and_evolution). Other goals include understanding the [formation of stars](https://en.wikipedia.org/wiki/Formation_of_stars) and [planets](https://en.wikipedia.org/wiki/Planet_formation), and [direct imaging](https://en.wikipedia.org/wiki/List_of_directly_imaged_exoplanets) of [exoplanets](https://en.wikipedia.org/wiki/Exoplanets) and [novas](https://en.wikipedia.org/wiki/Nova).

### Artemis program:

### The Artemis program is an ongoing [crewed spaceflight program](https://en.wikipedia.org/wiki/List_of_human_spaceflight_programs) carried out by [NASA](https://en.wikipedia.org/wiki/NASA), U.S. [commercial spaceflight companies](https://en.wikipedia.org/wiki/Private_spaceflight), and international partners such as [ESA](https://en.wikipedia.org/wiki/European_Space_Agency), with the goal of landing "the first woman and the next man" on the Moon, specifically at the [lunar south pole](https://en.wikipedia.org/wiki/Lunar_south_pole) region by 2024. Artemis would be the next step towards the long-term goal of establishing a sustainable presence on the Moon, laying the foundation for private companies to build a lunar economy, and eventually sending humans to [Mars](https://en.wikipedia.org/wiki/Mars).

1. **Conclusion:-**

From this study, we get to know about the importance and future of space exploration for the development of mankind. We have explored just 0.001 % of the universe so, the exploration should be regular to know about the vast knowledge of the universe that are still unknown. This is the main conclusion of this study.

1. **Acknowledgement:-**

I would like to express my special thanks of gratitude to my teacher Mr. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ as well as our principal Mr. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ who gave us the golden opportunity to do this wonderful project on the topic “STUDY OF SPACE EXPLORATION”, which also helped me in doing a lot of research and I came to know about so many new things I am really thankful to them.

Secondly, I would like to thank my parents and friends who helped me a lot in finalizing this project within the limited time frame.

1. **References:-**

* [www.wikipedia.com](http://www.wikipedia.com)
* [www.britannica.com](http://www.britannica.com)
* [www.encyclopedia.com](http://www.encyclopedia.com)