FUNOOSA

FUTURISTIC UNITED NATIONS OFFICE FOR OUTER SPACE AFFAIRS

STUDY GUIDE

JB MUN 2024

TABLE OF CONTENTS

Letter from the Director

Dear Delegates,

It is with immense joy and great honor that I welcome you to the 8th edition of J.B. MUN 2024. After months of preparation, it's hard to believe that the time has finally come, and we couldn't be more excited to have you join us for this esteemed conference.

My name is Anannya, currently a student in the 10th grade, and I have been an active participant in MUN conferences for over three years. Beyond MUN, I have a passion for football, running, and indulging in my academic interests, which include Biology and History.

Something I absolutely cannot survive without is coffee, there is nothing I love more than my caramel frappe, do with that information as you please.

Participating in MUNs opens up a whole new world of opportunity for not only becoming familiar with and analyzing global problems, but also learning to develop a logical approach towards providing practical solutions to those problems. No other forum allows you to express yourself so freely albeit in a measured and disciplined manner : the very foundation of diplomacy. MUNs allow you to understand and analyze the stance of different countries on critical global situations as well as give you a thorough understanding of how diplomatic relations between nations and blocs work. A MUN conference not only hones your debating skills but also teaches you the art of negotiation and reaching a consensus or sometimes a compromise on world matters. Not only that, it allows you to develop writing and drafting skills and spruced up your presentation skills. Overall, it is a highly engaging and fulfilling process, that all students should experience.

For me, participating in MUN has allowed me to explore the various facets of my personality, develop a more confident persona as well as geared me for real world situations .

I hope that your MUN experience helps you to develop a more well rounded personality as it has done for me and that it enriches your life with the plethora of new experiences that it offers.

Model United Nations can be challenging, chaotic, and even intimidating at times, but it's an experience that offers unparalleled learning and growth. It empowers young minds to voice their opinions on global issues, broadens perspectives, and helps build skills like diplomacy, teamwork, and leadership. You might feel unprepared or nervous, especially when you see other experienced delegates, but it's this very feeling of intimidation that helps you grow, pushing you to become more confident and articulate.

This year, I am thrilled to be chairing the Futuristic United Nations Office for Outer Space Affairs (FUNOOSA) with the agenda focused on *Space Technology with regards to Extraterrestrial Life*. As various countries embark on a mission to explore Mars, they have discovered resources of significant importance. The challenge is to determine whether these resources should be distributed based on fair access or whether preference should be given to technologically advanced nations. It will be up to you, as delegates, to create a balanced international legal framework that addresses national interests, collective responsibility, and sustainable practices on Mars.

Throughout this conference, I encourage you to deliver passionate, well-researched, and fact-backed speeches. Be prepared to think on your feet and respond to the unpredictable crisis updates that come your way. Collaboration, creativity, and adaptability will be crucial in navigating the complexities of this agenda. Don't be afraid to speak up; every perspective adds value to the debate.

More than anything, I hope you enjoy this conference to the fullest. MUN is not just about following procedures and winning awards—it's about the experiences, friendships, and the confidence you gain along the way. Your first speech without notes, the excitement of hearing applause for your ideas, and the sense of accomplishment when you receive that first award are moments you'll cherish forever.

Remember, this platform is your opportunity to make your voice heard on pressing global issues. With hard work, determination, and the right spirit, I have no doubt that each one of you will make yourself proud.

On behalf of the entire executive board, we wish you the very best. We are here to support and guide you, so don't hesitate to reach out. Let's make J.B. MUN 2024 an unforgettable experience!

Best of luck, and I look forward to seeing you all in October!

Best Regards,
Anannya Bhatte,
Director of FUNOOSA,
JBMUN 2024

Letter from your the Assistant Director

Dear Delegates,

It is with immense joy and great honour that I welcome you to the Futuristic United Nations Office for Outer Space Affairs at JBMUN this year.

My name is Ssahana and I am currently studying in the 11th grade. My everyday schedule is a mix between extremely long naps , binge watching TV shows on Netflix and attempting (but failing) to finish my work. I am extremely passionate about playing and watching cricket and badminton. My academic interests include Mathematics, Economics and Accounts. I've been taking part in MUN conferences for over three years now, participating in and chairing various prestigious conferences.

MUN might be challenging, chaotic and scary but there is so much you take away and learn from the experience that in the end it is all worth it. What I love the most about MUN besides the friends I have made and the extremely dramatic crisis updates is that it empowers young minds to voice their opinion on global issues and helps broaden your perspectives and worldview. It is these conferences which will help build your confidence, help you learn how to collaborate and cooperate with others while at the same time being able to put across your point, and hone your skills of diplomacy. MUN is a platform that, if used properly, can do wonders for you and hence I encourage you to make the most of this opportunity.

This year for FUNOOSA the agenda we've chosen is Space technology with regards to extraterrestrial life. The mission by 30 countries to explore the possibility of life on Mars, has led to shocking discoveries. The resources found are important in nature, leading to arguments between countries on their division. The pivotal question that arises is whether the distribution should revolve around fair access or preference should be given to countries with advanced technology for better resource utilization. It is up to the delegates of this committee to create a new international legal framework that aims to strike a balance between national interests, collective responsibility, and sustainable practices on Mars.

Through the course of the committee I am looking forward to seeing fiery and passionate speeches, which contain witty analogies but are backed up with substantive facts. Delegates must be able to think on their feet and react spontaneously to crisis updates thrown at them. I expect detailed as well as radical communiques, which help make the committee fast paced and interesting. I also hope to see comprehensive paperwork and fruitful debate. Do not be afraid to speak up, because whatever you say matters.

I wish you all the very best and I am looking forward to seeing you in October. Lastly, the entire executive board is here to help you out at any time, so don't hesitate to reach out to us.

Best Regards,
Ssahana Shah,
Assistant Director of FUNOOSA,
JBMUN 2024

Letter from the Assistant Director

Dear Delegates,

MUN can mean many things to people.

For some, it is a potent extra-curricular that enhances their problem-solving and public speaking skills. For others, it is the perfect place to meet new friends and form new bonds. And for some, including me, it is both. This is a MUN of high reputation; the quality of debate here is amongst the very best you will find in the Mumbai circuit. This agenda is especially exciting, as the possibilities are endless. We are in the future, and instead of conforming to a world order, you delegates need to establish a new one. More than anything, creative thinking will be your best friend in this conference, and it will be what sets you apart. I can tell you from personal experience the next 3 days are going to be amazing. JBMUN will always hold a special place in my heart. This is my 4th year being a part of this competition, and so far, each has been more memorable after the other. I hope you delegates share the same experience as me, so have fun!

Best Regards,
Vivaan Dharamshi,
Assistant Director of FUNOOSA,
JB MUN 2024

Letter from the Assistant Director

Dear Delegates,

It is my absolute honor and privilege to welcome you to the Futuristic United Nations Office for Outer Space Affairs committee at JBMUN this year.

My name is Delaara Amaria, and I am a Grade 10 student at The J.B. Petit High School for Girls. Continents, cultures, communities, and content have always fuelled my interest, hence the gravitation to MUN has always been natural.

For the past three years, my involvement in MUN has been transformative. It has given me an opportunity to examine global challenges from diverse standpoints, significantly deepening my understanding of issues. This experience has not only enriched my knowledge but has also reshaped how I think critically and assess problems. MUN has made me more open-minded, and confident and has sharpened my communication and leadership skills.

Not to sound too cliche, Queen Elizabeth II once said

"The ability to compromise is not a weakness, it is a strength."

Finding common ground, effective communication, compromise, and confidence are fundamental pillars of MUN. Throughout the three-day conference, we hope to see thoroughly researched debates, productive collaboration, well-structured paperwork, and innovative solutions addressing the challenges surrounding space technology and the prospect of life on Mars.

Do not be intimidated to voice your opinions as every perspective counts.

Lastly, I would like to wish all of you the very best and look forward to meeting each one of you. Please do not hesitate to approach any member of the Executive Board before or during the conference if you have any queries.

Best Regards,
Delaara Amaria,
Assistant Director of FUNOOSA,
JBMUN 2024

INTRODUCION TO THE COMMITTEE- F UNOOSA

United Nations Office for Outer Space Affairs

INTRODUCTION

The ad hoc Committee on the Peaceful Uses of Outer Space was founded by the General Assembly in its resolution 1348 (XIII) of December 13, 1958, and was served by the United Nations Office for Outer Space Affairs, which was first established as a tiny expert unit within the UN Secretariat.

In 1962, the unit was transferred to the Department of Political and Security Council Affairs, and in 1968, it became the Department's Outer Space Affairs Division. The Division was reorganised into the Department for Political Affairs' Office for Outer Space Affairs in 1992. The Office moved to the Vienna United Nations Office in 1993.

Substantial secretariat functions to the Legal Subcommittee, previously handled by the Office of Legal Affairs in New York, were also taken over by the Office at that time.

Concerns regarding the militarisation of space are handled by the Geneva-based Conference on Disarmament.

ROLES AND RESPONSIBILITIES

The United Nations Office for Outer Space Affairs (UNOOSA) seeks to facilitate access to and use of space's benefits by all nations, particularly poor nations, in order to hasten sustainable development. Our efforts towards this objective encompass a wide range of space-related topics, from space law to space applications.

FUNOOSA employsa two-pronged strategy to assist nations in increasing their capacity to grow and capitaliseon the space industry: first, we offer resources like conferences, workshops, training, and knowledge-sharing portals; second, we supplement these with opportunities for countries to increase their space capabilities, like fellowships and competitive programs, some of which are specifically aimed at developing nations, like our Access to Space 4 All Initiative.

Our dedicated program UN-SPIDER assists nations in reducing the risk of catastrophes by using space data and technologies, like satellite images, to manage and avoid natural disasters.

Additionally, we assist nations with comprehending the foundations of international space law and enhancing their ability to create or amend domestic space laws and policies in compliance with global normative frameworks. This is especially crucial when more and more players enter the space industry.

Through initiatives like the Register of Objects Launched in Outer Space, which we manage and which connects every object to the responsible nation, we promote transparency in space activities.

In order to protect space for future generations, we not only seek to advance sustainable development through space but also to guarantee the sustainability of space activities. We do this by encouraging global solutions to issues like the sharp rise in space debris.

We collaborate with space agencies and leaders worldwide to find answers to problems that call for a global response, like the urgency of accelerating GNSS system compatibility and the danger of an impact from a near-Earth object.

FUNOOSA'S OPERATIONS

SECRETARIAT OF COPUOS

COPUOS is concerned with fostering global collaboration for the peaceful uses of space, keeping an eye on and discussing advancements in space exploration and utilisation, technological advances in space exploration, shifts in geopolitics, and the growing application of space science and technology for sustainable development.

PROGRAMME ON SPACE APPLICATIONS

Since its founding in 1971, the Programme on Space Applications (PSA) has advanced global understanding and expertise in space applications. The Program's provision of technical advisory services, education, assistance for research and development, and capacity-building for countries has all contributed to closing the gap between industrialised and developing nations.

The International Committee on Global Navigation Satellite Systems (ICG) works to safeguard and promote the use of open service applications in satellite navigation systems, which benefits the entire world community. It does this by facilitating compatibility, interoperability, and transparency across all satellite navigation systems.

UNITED NATIONS SPACE

UN-Space organises the Inter-Agency Meeting on Outer Space Activities every year so that UN system institutions can talk about issues pertaining to space. UN-Space hosts unofficial gatherings that are accessible to academia, business, non-governmental organisations, and Member States.

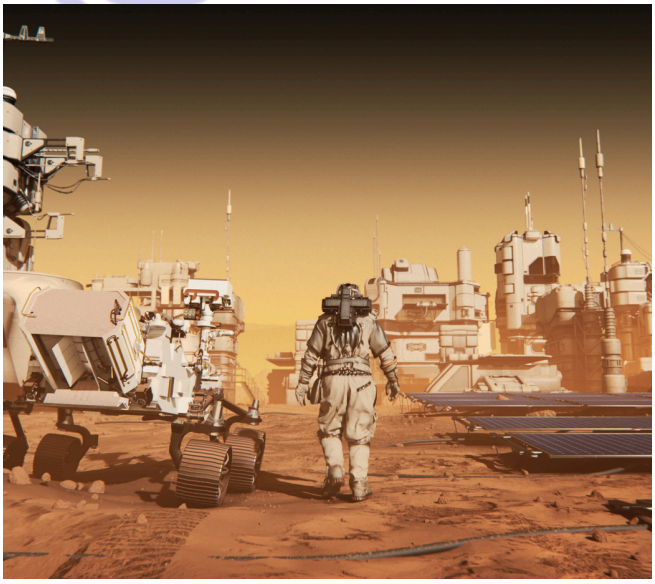
TOPIC AREA SUMMARY

Agenda - Space Technology with Regards to Extraterrestrial Life

Twenty years hence, shocking discoveries are made on Mars thanks to the joint support of 30 countries. The mission finds large amounts of iced-water underneath the Martian surface, which is necessary to sustain human life, and could be converted into hydrogen fuel. Rich strains of iron, nickel, and rare earth elements are also identified. These elements are essential for industrial and technological growth. Since these resources are essential to maintain long-term human presence and create an independent Martian economy, they provide opportunities and problems. The presence of Methane raises scientific interest, and the possibility of revolutionary research of extraterrestrial life. It also suggests the existence of biological activity.

The contributing nations, all keen to promote their interests and claims, engage in heated discussions over the newfound resources.

Arguments regarding the distribution of iced-water often revolve around fair access versus giving preference to countries with more advanced technology for resource exploitation. As nations argue about profit-sharing arrangements and the establishment of mining enterprises, the management of minerals causes additional conflict. An additional degree of complication is created by ethical worries about the effects of exploitation on the environment and the possibility of earth-based microbial contamination on Mars. A new international legal framework that aims to strike a balance between national interests, collective responsibility, and sustainable practices on Mars is clearly needed in the midst of these disputes.



HISTORY OF THE CONFLICT

With the successful launch of the Aurora probe to Mars in 2044, humanity had made the first move towards colonising a another planet. The mission's goal was to find renewable resources and lay the groundwork for future colonies. Motivated by the escalating global challenges, numerous governments collaborated intensely for two decades to achieve this remarkable feat. The world faced serious environmental problems by 2024 as a result of accelerating climate change, which resulted in increasing sea levels, extreme weather, and widespread ecological collapse. Earth's resources were running out at a startling rate at the same time. The availability of fossil fuels was declining, and there was growing pressure to switch to renewable energy sources. International authorities realisedthat the discovery of extraterrestrial resources could be critical to human existence. Thus, the idea of exploring Mars for resources and potential colonization became a matter of global urgency.

Numerous nations have independently attempted, albeit unsuccessfully, Mars missions in the years preceding the coalition's establishment. NASA launched the Valkyrie mission in 2026 with the goal of examining the presence of water ice and important minerals in Martian soil. Despite landing successfully, the mission was cut short when contact with the probe was lost in a matter of months. In 2027, China initiated Tianwen-4, a mission designed to carry out comprehensive atmospheric analyses in order to evaluate the feasibility of terraforming in the future. Sadly, the mission was unsuccessful since the probe's equipment broke down as soon as it entered the Martian atmosphere. Russia, which has a long history of space research, also made an attempt to land on Mars in 2028, but the Mars-Genesis mission crashed due to technical issues during the descent. These missteps highlighted the enormous obstacles to Mars exploration and the necessity of a concerted, international effort to overcome them.

Global leaders came together in 2029 to form the International Mars Coalition (IMC), pooling resources, knowledge, and technology to do what no one nation could do alone. They realised that individual efforts were insufficient. Leading the coalition were the United States, China, Russia, the European Union, India, and Japan; new space powers such as Brazil and the United Arab Emirates also contributed. This alliance, which brought together international academic institutes, commercial enterprises, and space agencies, was unique in its scope. With each nation contributing its special talents to the mission, the objective was not only to send a probe to Mars but also to establish the framework for human habitation and resource extraction on the planet.

The United States assumed the lead in developing the basic systems of the Aurora probe, especially its AI-driven autonomous navigation and communication technology, according to NASA's extensive experience in interplanetary missions. Modern solar power technology—which is necessary to harvest energy on the Martian surface—as well as sophisticated robotics for resource extraction were given by China. The launch system was developed by Russia, utilising its rocketry knowledge, and the European Union supplied essential scientific instruments for examining the Martian soil, ice, and atmosphere. India, which is renowned for its affordable space missions, was essential in the development of the spacecraft's propulsion system, and Japan provided materials science knowledge to guarantee that the probe could endure the harsh Martian climate and space flight.

Following a two-year period of collaborative creation and testing, the Aurora probe was prepared for launch by 2031. In order to achieve a more effective and fuel-efficient route to Mars, the IMC chose to launch the probe from a recently built cooperative space station circling the Moon. Billion people worldwide watched the launch, which marked the start of the probe's seven-month mission to the Red Planet. A new era of space exploration began in 2032 with the successful landing of Aurora. The probe conducted extensive surveys of the Martian surface over the course of the following few years, finding locations rich in minerals like iron, magnesium, and silicon that would be needed for future construction projects as well as large concentrations of water ice beneath the planet's crust.

The information that Aurora returned verified that it is possible to generate renewable energy on Mars. Even in the planet's thin atmosphere, the probe's solar panels functioned at maximum efficiency, indicating that solar energy might be a practical source of power for future colonies. Aurora also found what may be another possible energy source: geothermal activity in some areas. The results of the mission gave important new information about how human colonists could live on Mars by utilisingits natural resources to construct homes, create energy, and use in-situ resource utilisation (ISRU) technology to create water and oxygen.

The IMC transitioned from exploration to preparation for the first human missions to Mars by 2036. In this following stage, every coalition member participated. While China and the European Union worked on building dwellings that could be built using Martian materials, the United States and Russia led the construction of spacecraft capable of carrying humans to Mars. India concentrated on creating life support systems that might keep astronauts alive during the arduous journey and after they arrived on Mars because of its experience in space medicine. Japan maintained its position as a leader in materials technology, guaranteeing that the tools and dwellings would be resilient enough to survive the harsh conditions of the planet.

The coalition worked on issues outside of science and technology as well. It was necessary to set up legal and diplomatic structures to guarantee that Mars exploration and colonisation would take place in a fair and peaceful manner. In order to prevent any one country from claiming sovereignty over the planet or its resources, the IMC collaborated closely with the UN to draft agreements on the usage of Martian resources. The competitive, frequently antagonistic approach to space exploration that had characterised the early 21st century stood in stark contrast to this ethos of worldwide cooperation.

The first human missions to Mars had commenced by 2040. These missions established the foundation for a permanent human settlement even if their main objectives were resource extraction and scientific investigation. Small colonies were founded in areas that Aurora had determined to be stable and resource-rich. Energy was produced by solar farms, and water and oxygen were taken out of the ice below the surface. The IMC was joined by other nations and commercial businesses in the race to increase humankind's footprint on Mars as the colonies developed and the need for additional cooperation increased.

It was evident, looking back from 2044, that the International Mars Coalition's founding had marked a watershed in human history. What had started out as a fruitful new chapter in space exploration had developed from a desperate search for answers to Earth's growing woes. In addition to giving the knowledge required to start colonising Mars, the Aurora mission illustrated the value of international cooperation. It was the first time when the exploration and preservation of life on Earth and beyond actually brought humanity together.

In 2044, the main contributing countries of the International Mars Coalition (IMC) are becoming more tense with each other over who has contributed the most to the colonisation of Mars. Which country should own the greatest portion of the planet's resources and land is the main point of contention in these conflicts. Staking claims to various regions of Mars, the United States, China, Russia, the European Union, India, and Japan all maintain that their contributions to the project were the most significant. This widening divide poses a threat to the cooperative attitude that first united them to accomplish the momentous task of founding the first human settlement on Mars.

Right now, the US is highlighting its pioneering role in the early phases of Mars exploration, especially with the creation and implementation of the Aurora spacecraft. American officials contend that the project's overall success has been largely attributed to NASA's technological know-how and the financial support of private American companies. As proof of their major contribution, they are citing the building of vital infrastructure on Mars, such as energy production systems and habitat modules. Because of this, the United States is attempting to assert its claim to the parts of Mars that are abundant in water ice and precious minerals, thinking that they have a right to rule these vital regions.

China is arguing that the Mars colony would not be self-sustaining without its sophisticated robotic systems and energy solutions, which are now powering much of the colony. The automated mining systems and solar farms that are vital to the colony's day-to-day operations are being highlighted by Chinese officials as examples of their efforts. China is demanding sovereignty over the Martian regions with the most potential for producing solar energy as the conflict heats up, arguing that their contributions have been just as significant as those of any other country.

Both the European Union and Russia are actively involved in the conflict, both defending their respective positions in the project. Russia claims that the coalition would never have been able to transfer the tools, probes, and human crews required to build the colony if it hadn't been for its heavy-lift rockets, which were essential for transporting the missions to Mars. Meanwhile, the European Union is emphasising that the initiative would not have been possible without their scientific input, especially in mapping resource-rich regions of Mars and conducting surveys of the planet. Russia and the EU are competing with one other for influence over strategic areas, each presenting themselves as essential to the coalition's success.
The tenuous unity of the IMC is currently seriously threatened by the ongoing escalation of these resource and land issues. Although diplomatic attempts to settle the dispute are under way, no country appears prepared to budge from its claims. National interests and the struggle for supremacy are obscuring the original idea of Mars as a common frontier for humanity's collective destiny, especially in light of the potential for militarisation of the planet and the looming threat of future conflicts.

TIMELINE OF EVENTS

By 2024, the planet will be confronted with serious environmental issues, such as rapid climate change, increasing sea levels, and ecological collapse.

• As Earth's resources, especially fossil fuels, run out, world leaders are looking for resources elsewhere in the universe.

• Mars is suggested as a future site for human colonisationand as a possible source of renewable resources.

NASA sends the Valkyrie mission to Mars in 2026 to look for important minerals and water ice in the Martian soil. After a few months, communication with the probe is lost.

1. 2027: China launches Tianwen-4, a spacecraft intended to investigate the Martian atmosphere and determine whether terraforming is feasible. The instruments don't work properly, and the mission fails.

2. 2028: Russia makes an effort to land the Mars-Genesis probe on the planet. Technical issues during the probe's descent cause it to crash.

3. 2029: International Mars Coalition (IMC) is established by world leaders, who combine their resources to study Mars and develop plans for human colonisation. Along with contributions from Brazil and the United Arab Emirates, the coalition consists of the United States, China, Russia, the European Union, India, and Japan.

4. 2031: Following two years of cooperative development and testing, the Aurora probe is prepared for launch.From a cooperative space station circling the Moon, the probe is launched. Billion people worldwide watch the launch.

Aurora safely lands on Mars in 2032 and starts exploring the planet, finding large amounts of water ice and resource-rich regions.

5. 2036: The US and Russia concentrate on spacecraft development, China and the EU on Martian dwellings, India on life support systems, and Japan on materials research. The IMC shifts from exploration to the planning of the first manned flights to Mars.

6. 2040: Small colonies are founded in resource-rich areas, with solar farms supplying energy and water and oxygen taken from ice below the surface. The first human expeditions to Mars are under way, with a primary focus on scientific research and resource exploitation.

7..044: A significant turning point in space exploration is marked by the formation of the International Mars Coalition (IMC). The Aurora mission serves as an example of the strength of international cooperation, and the colonisation of Mars represents mankind as a whole.

• As contributing countries (US, China, Russia, EU, India, Japan) quarrel over sovereignty of Mars' resources and territory, tensions inside the IMC rise.

• The United States insists on maintaining control over areas rich in water ice and minerals, citing the Aurora investigation and its technological advances as reasons for its leadership.

• China pushes for control over areas rich in solar energy and highlights its involvement in automated systems and energy solutions.

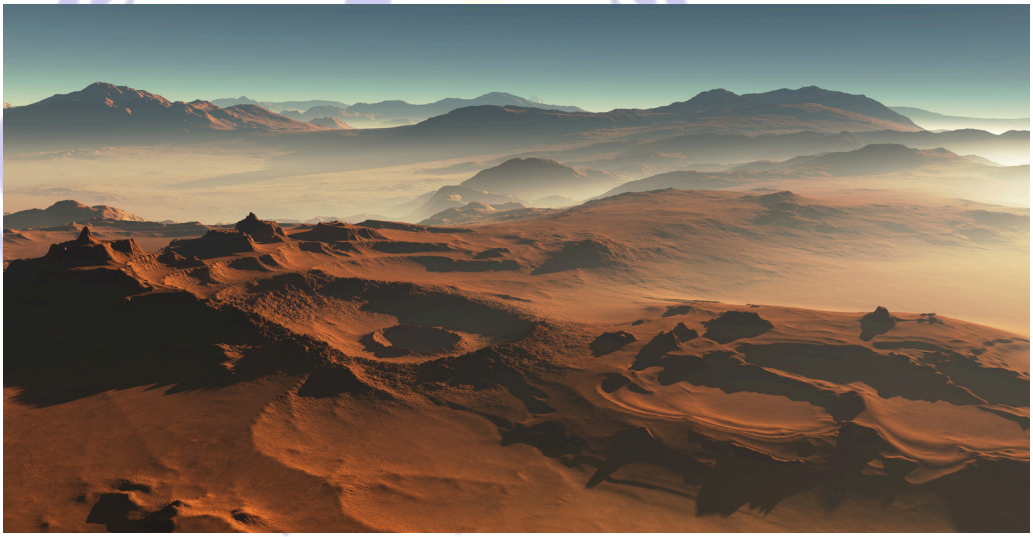
• As they compete for control of important resource areas, Russia and the European Union defend their contributions to scientific analysis and transportation.

• Although there are diplomatic attempts to moderate the escalating conflict, national interests pose a threat to split the coalition, which raises questions about militarisationand potential conflicts on Mars in the future.

CURRENT SITUATION ON MARS

Picture yourself on Mars, surrounded by massive dust storms and vast red plains. Humanity has come a long way in just a short period of time in adapting to this strange planet because of the collective efforts of thirty different nations. Over two decades following the initial mission, substantial underground freshwater ocean reserves have been found, which are essential for maintaining life. In addition to providing assistance to habitable areas with oxygen, this water can be split into hydrogen and oxygen, which feeds the planet's increasing energy and transportation necessities. Mining rich iron, nickel, and rare earth element deposits is contributing to the development of the first Martian industry. The chance of finding alien life has grown increasingly intriguing as scientists examine the methane remains in the atmosphere. Is there life on Mars still present beneath the surface, or are we looking at traces of extinct life?

Life on Mars, however, remains challenging. The thin and hazardous atmosphere forces people to live in cramped quarters, even if breathing oxygen can be produced by the water and air processing systems. Humans may now more easily travel over the wide expanse of the earth thanks to advanced transportation systems that run on hydrogen fuel. When going outside, colonists don customized suits, and new communities are popping up near mining sites and regions with lots of water. However, international disagreements over access and control have resulted from the drive to utilize Mars' resources. The difficulties of maintaining a balanced approach to survival and exploration are exacerbated by ethical worries about protecting the Martian environment and avoiding contamination from Earth. Humanity's survival on Mars depends on collaboration and creativity as we continue to explore this fascinating world.



Scientific Details about the Discovery

ICED WATER

Iced Water essentially refers to water that has been cooled and frozen into ice. However, in the context of space exploration and Mars colonization, the concept of iced water takes on additional significance, particularly in relation to the availability and utilization of water resources. Water is vital for human survival, as drinking water, for food production, and hygiene. For Mars colonization, ensuring a reliable and sustainable water supply is important. Mars has water in the form of ice, primarily at its polar ice caps and in subsurface layers, utilizing this water is a key focus for future exploration and colonization. For future Mars habitats and colonies, having a reliable source of water is crucial. ISRU techniques to convert Martian water ice into usable resources will be a key part of sustainable colonization efforts. Technologies need to be developed to effectively locate, extract, and process water ice on Mars. This includes drilling equipment, ice-processing plants, and systems to recycle and purify water. Once extracted, water must be stored and handled appropriately. On Mars, this means dealing with extremely cold temperatures and ensuring that the water remains in a usable state.

IRON

Iron is a crucial element for several reasons when considering Mars colonization. One of the primary goals of space exploration is to use local resources to reduce reliance on supplies from Earth. Iron found can be utilized in various ways such as building material for constructing habitats, tools, and infrastructure on Mars. Its strength and durability make it suitable for creating structures that need to withstand the harsh Martian environment. ron is a key element in the study of Martian geology. Analyzing the iron content and distribution in Martian rocks and soil helps scientists understand the planet's geological history and volcanic activity.

NICKEL

Nickel is an important element with several potential applications and benefits for Mars. Nickel is often used to create alloys, such as stainless steel, which is known for its strength, corrosion resistance, and durability. These properties make nickel-containing alloys useful for constructing equipment, habitats, and infrastructure on Mars. Nickel is a key component in various energy storage technologies, including batteries and fuel cells. Nickel catalysts are used in hydrogen production processes, such as water electrolysis. Hydrogen could be a valuable resource on Mars for fuel and life support systems.

RARE EARTH ELEMENTS

Rare earth metals (REMs) are a group of 17 elements, including lanthanides and certain heavy elements, that have significant industrial and technological applications on Mars. Rare earth metals like lanthanum and cerium are used in rechargeable batteries, including nickel-metal hydride (NiMH) batteries. Rare earth metals are essential for the production of advanced electronics and communication systems.These batteries are important for energy storage systems in Martian habitats and rovers. On Mars, these technologies will be crucial for communication, data processing, and scientific instruments.

METHANE

Methane on Mars is a topic of great interest because it has implications for both the planet's potential habitability and its geological processes. Methane is a potent greenhouse gas. Although Mars' atmosphere is extremely thin compared to Earth's, methane could contribute to minor greenhouse warming. This could have implications for Martian climate, especially if methane concentrations were to increase significantly. Methane can be released through volcanic or geothermal activity. On Mars, the presence of methane could indicate past or present volcanic activity, which is important for understanding the planet's geological history and thermal evolution.

Scientific Details about the Discovery

ICED WATER

Iced Water essentially refers to water that has been cooled and frozen into ice. However, in the context of space exploration and Mars colonization, the concept of iced water takes on additional significance, particularly in relation to the availability and utilization of water resources. Water is vital for human survival, as drinking water, for food production, and hygiene. For Mars colonization, ensuring a reliable and sustainable water supply is important. Mars has water in the form of ice, primarily at its polar ice caps and in subsurface layers, utilizing this water is a key focus for future exploration and colonization. For future Mars habitats and colonies, having a reliable source of water is crucial. ISRU techniques to convert Martian water ice into usable resources will be a key part of sustainable colonization efforts. Technologies need to be developed to effectively locate, extract, and process water ice on Mars. This includes drilling equipment, ice-processing plants, and systems to recycle and purify water. Once extracted, water must be stored and handled appropriately. On Mars, this means dealing with extremely cold temperatures and ensuring that the water remains in a usable state.

IRON

Iron is a crucial element for several reasons when considering Mars colonization. One of the primary goals of space exploration is to use local resources to reduce reliance on supplies from Earth. Iron found can be utilized in various ways such as building material for constructing habitats, tools, and infrastructure on Mars. Its strength and durability make it suitable for creating structures that need to withstand the harsh Martian environment. ron is a key element in the study of Martian geology. Analyzing the iron content and distribution in Martian rocks and soil helps scientists understand the planet's geological history and volcanic activity.

NICKEL

Nickel is an important element with several potential applications and benefits for Mars. Nickel is often used to create alloys, such as stainless steel, which is known for its strength, corrosion resistance, and durability. These properties make nickel-containing alloys useful for constructing equipment, habitats, and infrastructure on Mars. Nickel is a key component in various energy storage technologies, including batteries and fuel cells. Nickel catalysts are used in hydrogen production processes, such as water electrolysis. Hydrogen could be a valuable resource on Mars for fuel and life support systems.

RARE EARTH ELEMENTS

Rare earth metals (REMs) are a group of 17 elements, including lanthanides and certain heavy elements, that have significant industrial and technological applications on Mars. Rare earth metals like lanthanum and cerium are used in rechargeable batteries, including nickel-metal hydride (NiMH) batteries. Rare earth metals are essential for the production of advanced electronics and communication systems.These batteries are important for energy storage systems in Martian habitats and rovers. On Mars, these technologies will be crucial for communication, data processing, and scientific instruments.

METHANE

Methane on Mars is a topic of great interest because it has implications for both the planet's potential habitability and its geological processes. Methane is a potent greenhouse gas. Although Mars' atmosphere is extremely thin compared to Earth's, methane could contribute to minor greenhouse warming. This could have implications for Martian climate, especially if methane concentrations were to increase significantly. Methane can be released through volcanic or geothermal activity. On Mars, the presence of methane could indicate past or present volcanic activity, which is important for understanding the planet's geological history and thermal evolution.

RELEVANT ORGANISATIONS

SPACE-X

SpaceX is an American spacecraft manufacturer, launch service provider and satellite communications company headquartered at the SpaceX Starbase near Brownsville, Texas founded by Elon Musk. Its development of the Starship spacecraft is aimed at enabling reusable, long-duration missions to Mars and beyond. SpaceX is one of the most prominent private companies with ambitious plans for Mars colonization. SpaceX's goal is to make space travel more affordable and sustainable, with a vision of establishing a self-sustaining city on Mars.

NASA (National Aeronautics and Space Administration)

NASA is the leading space agency in the U.S. and plays a pivotal role in Mars exploration. Its missions, such as the Mars rovers, Mars Sample Return mission, and the Artemis program, are crucial for gathering data about Mars and developing technologies for human exploration. NASA envisions sending humans to Mars in the 2030s. The goal is to establish a sustainable human presence on Mars, which involves not only landing astronauts but also creating the necessary infrastructure for long-term habitation.

EUROPEAN SPACE AGENCY

It is an intergovernmental organization dedicated to space exploration. It collaborates with other space agencies on Mars missions, such as the ExoMars program, which includes the Rosalind Franklin rover and the Trace Gas Orbiter. Its contributions to Mars exploration through scientific research, technology development, and international collaboration are vital for understanding the planet and preparing for colonization.

ROSCOMOS (Russian Federal Space Agency)

Roscosmos is Russia's national space agency and has been involved in Mars exploration since the Soviet era. It has collaborated with the European Space Agency on the ExoMars program and ongoing research into Mars missions. Roscosmos has discussed plans for future Mars missions, including both robotic and crewed missions. Roscosmos is involved in long-term planning and research that could eventually contribute to human exploration of Mars.

BLUE ORIGIN

Blue Origin is an American aerospace manufacturer, government contractor, launch service provider, and space technologies company headquartered in Kent, Washington, United States, founded by Jeff Bozos. While Mars colonization is not the company's immediate focus, its technologies and goals are relevant for enabling deeper space exploration, including potential missions to Mars. The technologies developed for Blue Origin's launch systems, landers, and spacecraft could be adapted for Mars missions. Blue Origin's focus on building reusable and cost-effective space infrastructure supports the broader goals of space exploration. Reliable launch systems and advanced spacecraft are essential for enabling missions to Mars and establishing a human presence on Mars.

The United States has had an proactive stance towards colonization of Mars for both strategic as well as scientific reasons. In the past the United States has invested heavily in robotic exploration of Mars through missions like the Mars rovers. These missions aim to understand Mars' geology, climate, and potential for past life, which are essential for planning the possibility of colonization of Mars. The United States, having a fully funded and developed space programme is going to lean towards allowing countries with more advanced technology the right to resource exploration on Mars.

RUSSIA AND ALLIES

Russia has shown interest in Mars over the past few years however, Russia's Mars exploration efforts have been more focused on robotic missions rather than human exploration. Russia has been collaborating with international partners on Mars exploration like the ExoMars mission, which includes the ESA's rover and the Russian Surface Platform. The Russian space agency, Roscosmos, has discussed plans for a Martian base and has outlined concepts for exploring Mars, but these plans are often part of broader discussions rather than concrete, funded programs.

THE EUROPIAN UNION

The European Union relies on the European Space Agency which is an intergovernmental organization. The European Space Agency has in the past collaborated with Russia to launch the ExoMars program which includes the Rosalind Franklin rover and the Trace Gas Orbiter, which is currently studying Mars' atmosphere and surface. Their policies emphasize international collaboration, scientific research, and technological innovation. While Mars colonization is not a primary focus, the EU supports missions that contribute to understanding Mars and preparing for future exploration.

MIDDLE EASTERN COUNTRIES

Middle Eastern countries have shown increasing interest in space exploration, including Mars. The UAE has set ambitious goals, including the development of a Mars science city on Earth as a precursor to potential Mars missions. Middle Eastern countries are increasingly engaging in international collaborations and partnerships in space research. They are involved in joint missions, research projects, and space technology development with global space agencies and private companies. The Middle Eastern countries have proactively shown support towards international collaboration in space colonization and exploration.

AFRICAN UNION

The African Union, with a recently developed space programme, will find it difficult to find equality in sharing of resources between nations party to this mission. can countries collaborate with international space agencies and organizations. This includes partnerships with NASA, ESA, and other global space entities. These collaborations often focus on scientific research, technology development, and capacity building. The African Union will have to work together to ensure that the resources are divided equally and countries with fully funded and developed space programmes.

TOPICS TO BE DISCUSSED

1. Public vs. Private Access to Mars:

As the exploration of Mars moves from theory to reality, delegates should consider the balance between public and private interests in space. The 1967 Outer Space Treaty forbids nations from claiming sovereignty over celestial bodies, but private companies like SpaceX are pushing the boundaries of this principle with their plans for Mars colonization. Since this committee is many years in the future, amendments to this 1967 outer space treaty or a new treaty altogether could be formed as well. Delegates should discuss how to regulate resource extraction, settlement rights, and the role of international organizations in overseeing Mars-related activities. They must also be aware of the risks that unchecked privatisation could lead to, such as monopolisation of resources or exploitation without regard for ethical or environmental concerns.

2. Sustaining Life on Mars (Practical Issues):

Sustaining human life on Mars presents significant challenges that delegates should address with both scientific and logistical foresight. Delegates should explore potential solutions, such as building self-sustaining habitats using Martian resources or relying on Earth for continued supply shipments. The new resources provided or discovered via the information in the study guide before should also be used. Additionally, the conversation should cover renewable energy sources like solar or nuclear power, and innovative agricultural techniques like hydroponics to grow food. It is important to recognize the long-term health risks to settlers, including the effects of reduced gravity on human physiology, which will require advanced medical planning.

3. Geopolitical Martian Issues:

Delegates should be mindful of the geopolitical tensions that could arise from the colonization of Mars. With nations and corporations competing for influence, the governance of Martian colonies could become a flashpoint for international conflict. How will colonies be administered—by Earth-based governments, or will Mars have autonomous regions? Issues surrounding the control of valuable Martian resources, such as water and rare minerals, could lead to disputes if no clear regulatory framework is established. This is why the committee should definitely establish one. The potential for security concerns also exists, and delegates must discuss whether Mars should remain a demilitarised zone only for science, much like Antarctica, or if defenceforces will be necessary as settlements expand.

4. Ethical and Social Issues of Colonizing Mars:

The ethical considerations of Mars colonization are just as important as the technical challenges. Delegates must deliberate on how human rights will be maintained in Martian colonies, where legal jurisdictions may be unclear. Should colonists follow Earth's human rights standards, or will they develop their own laws? Another issue is the potential discovery of indigenous life on Mars, even in microbial form, which would pose serious ethical questions about altering ecosystems. Delegates should also think about ensuring that Mars colonisationefforts are inclusive and accessible to all nations, rather than being dominated by wealthy countries or private companies.

5. Mars Resource Management and Environmental Protection:

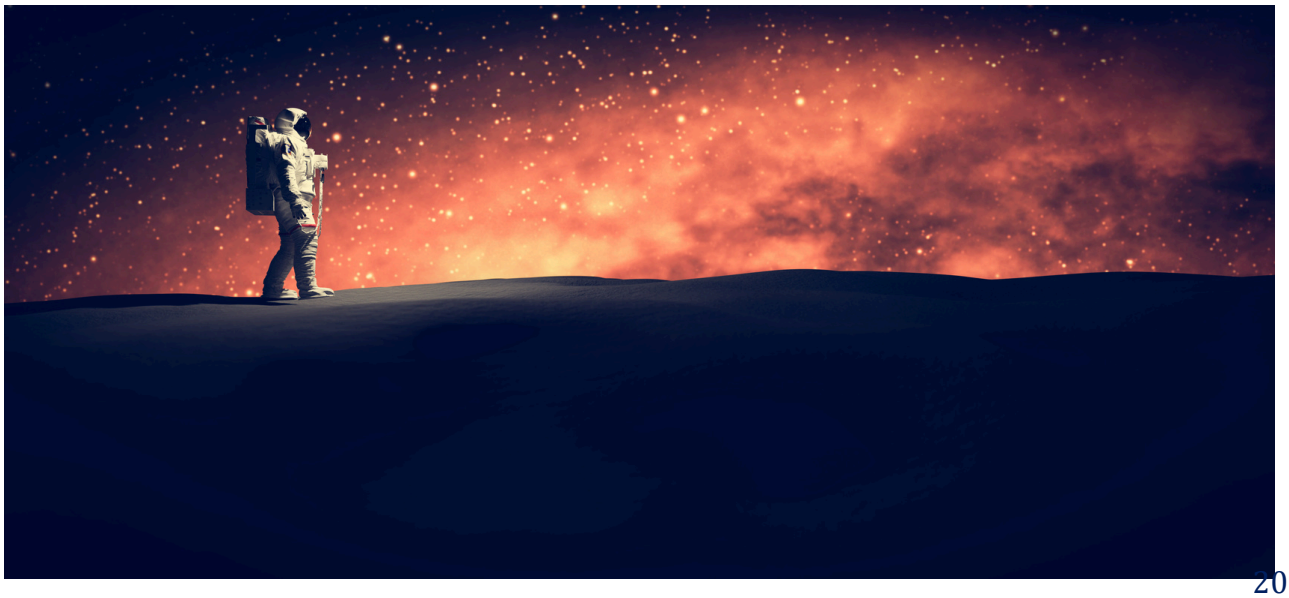
Resource extraction on Mars presents both opportunities and risks, which delegates need to carefully balance. Mars has the potential to supply valuable minerals and water, but the environmental impact of mining must be taken into account. Delegates should discuss the establishment of sustainable mining practices that minimize harm to Mars' natural environment. Moreover, they should consider the role of international regulation in preventing resource hoarding and ensuring that Mars' resources are shared equitably. Environmental ethics must guide decisions about how much of Mars should be developed and how much should remain untouched for future generations.

6. Space Law and Sovereignty:

As Mars becomes a new frontier, delegates should recognize that existing space law, particularly the 1967 Outer Space Treaty, may need updating to accommodate the complexities of colonization. The treaty currently prevents nations from claiming territory on celestial bodies, but what happens when colonies become permanent? Delegates should discuss whether new treaties or amendments are necessary to clarify the rules for settlement, resource ownership, and territorial claims on Mars. Questions of Martian citizenship and governance will also arise, as future settlers may demand autonomy from Earth-based governments. How will sovereignty be defined on a planet where no nation can officially claim land?

7. Mars as a Launchpad for Further Exploration:

Looking beyond Mars, delegates should consider its potential as a strategic launchpad for further exploration of the solar system. Mars could serve as a base for missions to the asteroid belt, or to the moons of Jupiter and Saturn, or even further into outer space. The lower gravity on Mars compared to Earth may make it easier to launch deep-space missions from the Martian surface. Delegates should weigh the benefits and challenges of using Mars as a hub for future space exploration and consider how international partnerships can be leveraged to extend humanity's reach into the solar system. Can humans go on to colonize the solar system in a sustainable manner? While this is not an immediately pressing aspect of debate, delegates can include this and should discuss this sometime during committee.



POINTS FOR FURTHER RESEARCH

Innovation and Scientific Study on Mars:

1. How might learning about the geological past of Mars help us comprehend life that once existed there?

2. How might technology on Earth benefit from developments in the construction of Martian habitats?

3. How will artificial intelligence and robots support human activities on Mars?

Transportation of Resources on Mars:

4. What are a few of the difficulties in transferring resources and minerals throughout Mars?

5. How might rovers and self-driving cars be utilised on Mars for transportation and resource extraction?

6. What benefits might an underground rail system on Mars bring for the mobilisation of resources?

7. How might personnel and supplies be moved throughout Martian colonies using unmanned aerial vehicles or tiny spacecraft?

Types of Mars Colonies:

8. What are the main purposes of the many kinds of Mars colony establishments that are possible?

9. How may agricultural colonies affect Mars's ability to produce food?

10. What are the advantages of building dome or subterranean settlements on Mars?

Agriculture and Farming on Mars:

10. What advancements in soil treatment would be required to enable agriculture on Mars?

11. How might crops be grown in Martian homes using hydroponics?

12. What difficulties would there be in farming fish or chickens on Mars

Mars's Life Forms:

13. What would happen if microbial life or extremophiles were found on Mars?

14. How might living things on Mars serve as an inspiration for bioengineering solutions for Martian agriculture?

15. What moral issues need to be taken into account when bringing organisms from Earth to Mars?

16. If artificial life forms are involved in the process of terraforming Mars, how would that be?

These enquiries delve into a range of topics related to Mars colonisation, including research, logistics, agriculture, and moral considerations.

QUARMA

Important facets of space exploration, colonisation, government, and international collaboration should be included in a resolution in a futuristic UNOOSA (United Nations Office for Outer Space Affairs) committee

1. Law and Order

• What kind of governance will there be for space colonies, like those on Mars or the Moon?

• What global structure will control the utilisation of space resources (such as mining Mars and asteroids)?

• What measures can we take to guarantee that space exploration follows international legal frameworks such as the Outer Space Treaty?

• Who will be in charge of handling disputes or crimes committed in space colonies?

2. Ownership and Resource Management

• How will governments and private enterprises divide and distribute resources discovered on other planets, moons, or asteroids?

• If a framework for claiming ownership of resources from other planets exists, what should it look like?

•What regulations can be put in place to prevent a few strong players or countries from monopolising the extraction of resources?

3. Sustainability and Environmental Protection

• What safeguards will be put in place to guarantee the ecological sustainability of space travel and colonisation?

•In order to protect the planet and maybe preserve extraterrestrial life, how can we avoid contaminating extraterrestrial environments?

•How will space pollution be reduced, and should controls be in place for the debris produced by space activities?

4. Human Rights with Ethical Aspects

• How will colonies on other planets uphold human rights?

• What moral standards ought to be set for genetic engineering, bioengineering, and experimentation with humans residing in space environments?

• How will the safety of settlers and astronauts be ensured, particularly on extended missions?

5. Security and Militarisation

• What steps can we take to keep space a peaceful area and stop it from becoming militarised?

• What security steps will be implemented to guard colonies and space assets against dangers such as terrorism, state strife, and piracy?

• How will countries work together to secure space in order to avert a space war or arms race?

6. International Cooperation and Building of Capabilities

• How can space exploration be made more inclusive so that developing countries or countries with limited space capabilities can participate?

•Which frameworks will promote global cooperation in the fields of science, resource sharing, and technological advancement?

•How is UNOOSA going to guarantee all member states fair access to space technologies?

8. Commercialisation and the Private Sector

• How will private enterprises be governed in their operations, and what part will they play in space exploration and colonisation?

•How can the public interest in space exploration be balanced with the rights of private corporations under international law?

•Should the extraction of resources from heavenly planets by private companies be subject to taxes or regulations?

9. Safety and Health

• How will private enterprises be governed in their operations, and what part will they play in space exploration and colonisation?

•How can the public interest in space exploration be balanced with the rights of private corporations under international law?

•Should the extraction of resources from heavenly planets by private companies be subject to taxes or regulations?

10. Conflict Resolution:

•What procedures will be in place to settle disagreements in space between states or private parties?

• How will disputes over scientific research, regions, or space resources be resolved?

11. Funding and Technology Transfer

•How will countries share the cost of space exploration, particularly for collaborative missions or projects?

• What procedures will guarantee the exchange of inventions and technological breakthroughs for the mutual benefit of all member states?

POSITION PAPER GUIDELINES

A position paper is an essential part of your preparation for the committee. It allows you to gain a deeper understanding of the topic and will be helpful in bettering your arguments. Your position paper should be single-spaced and will be helpful in twelve-point Times New Roman font. Your name, school, committee, allocation and topic area should be stated in the upper-left-hand corner. Plagiarism is strictly forbidden and any delegate found plagiarizing will not be eligible for an award.

At JBMUN, the position paper requirements are as follows:
Format- The paper may be 1-3 pages long, consisting of three paragraphs. The font used must always be Times New Roman, size 12.

1. First Paragraph- This should be a brief history and summary of the agenda at hand. This may include descriptions of previous action taken by the UN and other countries.
2. Second Paragraph- Mention your country's stance on the topic and any involvement it may have had in the issue.
3. Third Paragraph- Explain briefly a few original solutions to the crisis at hand.

Please refer to the JBMUN Delegate's Guide provided on our website www.jbmun.com for a sample position paper and for further instructions on format and presentation.

Submission- Position papers should be emailed to funoosa.jbmun2024@gmail.com on or by **20th October 11:59pm latest.**

Position papers must be submitted before midnight on the deadline day or the delegate will not be eligible for an award.
Delegates must make a bibliography at the end of their position papers stating their source of information.

NOTE-Please refer to the conference handbook to familiarize yourselves with all other forms of paperwork(Communiques, Directives and Draft Resolutions).

BIBLIOGRAPHY

https://www.nasa.gov/international-space-station/space-station-research-and-technology/

https://www.nasa.gov/international-space-station/space-station-research-and-technology/

https://sdgs.un.org/un-system-sdg-implementation/united-nations-office-outer-space-affairs-unoosa-49126

https://www.researchgate.net/publication/259740528_Human_Mars_Exploration_Research_Objective

http://mdrs.marssociety.org/

https://www.britannica.com/science/space-exploration/Science-in-space

https://www.sciencedirect.com/journal/advances-in-space-research