



SPACE4SDGS CHALLENGES



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This module offers 17 engaging challenges designed to help students connect space technology and innovation with the UN's Sustainable Development Goals (SDGs) in particular United Nation's Office for Outer Space Affairs (UNOOSA) Space4SDGs. Each challenge explores a unique way in which space-related technology can address critical global issues, fostering creative problem-solving and sustainable thinking.

Each challenge encourages learners to think creatively about how space technology can be a powerful tool for achieving sustainable development, fostering both technical skills and a global perspective. Learners undertake the creative process and conceptual challenge of the proposed challenges and are supported with the lesson resources to think through the challenges and problems within the design challenge and develop prototypes of their ideas rather than actual working solutions.

SDG 1: Zero Poverty – Space for Rural Connectivity

- Design a satellite system that provides affordable internet access to remote and underserved areas, bridging digital divides to support economic growth.

SDG 2: Zero Hunger – Space Agriculture Innovation

- Develop a system that leverages satellite data to optimise sustainable agriculture and monitor crop health, reducing hunger and food insecurity.

SDG 3: Good Health and Well-being – Remote Medical Support

- Create a telemedicine platform using satellite networks to deliver remote medical services and health monitoring for isolated or underserved populations.

SDG 4: Quality Education – Space Education Access

- Design a satellite-based learning platform that connects students in remote areas to quality educational resources and virtual classrooms.

SDG 5: Gender Equality – Women in Space Technology

- Develop a program or platform that empowers women and girls in STEM, highlighting and supporting their roles in space research and exploration.

SDG 6: Clean Water and Sanitation – Space Data for Water Quality

- Create a satellite system that monitors water quality, identifying pollution sources and aiding in water conservation efforts globally.



SDG 7: Affordable and Clean Energy – Solar Power from Space

- Design a space-based solar power system capable of capturing solar energy and transmitting it to Earth, providing clean, renewable energy.

SDG 8: Decent Work and Economic Growth – Space for Emerging Markets

- Develop a platform that uses space data to support emerging markets, offering insights on sustainable economic growth and resource management.

SDG 9: Industry, Innovation, and Infrastructure – Advanced Space Tech

- Build a satellite system that enhances infrastructure planning, such as tracking climate resilience or monitoring construction projects.

SDG 10: Reduced Inequalities – Space for Equal Opportunity

- Design a system that uses satellite data to identify and mitigate disparities, providing insights into access to resources and services worldwide.

SDG 11: Sustainable Cities and Communities – Space Data for Urban Planning

- Develop a space data platform that aids in sustainable urban planning, helping cities optimize resources and manage pollution.

SDG 12: Responsible Consumption and Production – Space for Waste Management

- Create a monitoring system that tracks environmental waste using satellites, helping reduce waste production and improve recycling efforts.

SDG 13: Climate Action – Satellites for Climate Monitoring

- Design a satellite system that monitors climate indicators like CO₂ levels, helping countries track climate change and respond more effectively.

SDG 14: Life Below Water – Ocean Health from Space

- Develop a satellite-based tool that monitors ocean health, tracking issues like coral reef loss, pollution, and overfishing.

SDG 15: Life on Land – Terraforming for Biodiversity

- Create a system that supports ecosystem growth on terraformed planets, monitoring biodiversity and maintaining a balanced ecosystem.

SDG 16: Peace, Justice, and Strong Institutions – Space for Crisis Monitoring

- Design a satellite network to monitor conflicts or natural disasters, providing real-time data for global crisis response.

SDG 17: Partnerships for the Goals – International Space Collaboration

- Build a platform that encourages international cooperation in space research, promoting joint efforts in tackling global challenges.