

# Centre for Space Science & Technology



Admission Open

## Certificate Programme in **SPACE SCIENCE & TECHNOLOGY** **2024-2025**

Innovate. Transform. Thrive.



## INTRODUCTION

Space science and technology are pivotal to modern society, underpinning advancements in communication, navigation, and environmental monitoring. The exploration and utilization of space resources have opened new frontiers for scientific research and technological innovation. This certificate program is meticulously designed to provide participants with an in-depth understanding of space science and technology, equipping them with the skills and knowledge required to excel in this dynamic field. By integrating theoretical knowledge with practical applications, the program aims to cultivate a new generation of professionals poised to contribute to the growth and development of the space industry.

Space exploration has always captivated human imagination, pushing the boundaries of knowledge and technology. Space sciences and technology encompass a broad spectrum of disciplines, from astronomy and astrophysics to space engineering and exploration. These fields not only deepen our understanding of the cosmos but also drive technological innovations with tangible societal benefits, from communication satellites to space exploration missions.

Utilizing space technologies to address pressing challenges on Earth, such as climate change, resource depletion, and natural disasters, enhances monitoring, prediction, and mitigation strategies, thereby improving resilience and sustainability on our planet. Additionally, the economic potential of space industries including satellite communication, Earth observation services, and space tourism offers significant opportunities for job creation, economic growth, and technological innovation, driving global competitiveness and prosperity.

Moreover, the quest for scientific discovery and exploration inherent in space missions inspires innovation, fosters international collaboration, and cultivates a sense of wonder and curiosity that transcends borders, enriching human culture and knowledge for generations to come.

## OBJECTIVES

- To enhance our comprehension of the universe through its exploration.
- To innovate advanced technologies for space exploration, satellite communications, and Earth observation.
- To educate and prepare a new generation of scientists, engineers, and leaders to tackle challenges and seize opportunities in space exploration and technology.
- To encourage interdisciplinary collaborations for innovation and facilitate international cooperation in space science and technology.

## COURSE HIGHLIGHTS

- 1. Comprehensive Curriculum:** Covering essential topics in space science, satellite systems, data science, and experimental techniques, ensuring a well-rounded education.
- 2. Hands-on Learning:** Opportunities for practical application through laboratory sessions in experimental techniques, data science, and remote sensing, providing valuable hands-on experience.



- 3. Industry-Relevant Skills:** Acquisition of skills highly sought after in the space industry, including satellite system design, launch vehicle operations, and data analysis techniques.
- 4. Real-World Applications:** Integration of practical projects and internships/capstone projects provides exposure to real-world scenarios, preparing students for challenges in the space industry.
- 5. Expert Faculty:** Guidance from experienced professionals and researchers in the field ensures a high-quality learning experience and mentorship for career development.
- 6. Opportunities for Collaboration:** Collaboration with peers and industry partners fosters teamwork and networking, enriching the learning journey and opening doors to future opportunities.
- 7. Career Development:** Preparation for various roles in the space industry, research institutions, and related sectors, empowering graduates to make meaningful contributions to the field upon completion of the program.

## CURRICULUM HIGHLIGHTS

- 1. Space Science Foundation:** Delve into the fundamental principles of space science, exploring topics such as astrophysics, cosmology, and planetary science.
- 2. Satellite Systems and Launch Vehicles:** Gain comprehensive knowledge of satellite technology, launch vehicle operations, and the intricacies of space missions.
- 3. Data Science and Remote Sensing:** Learn advanced data analysis techniques and their application in remote sensing, essential for interpreting satellite data and extracting valuable insights.
- 4. Practical Laboratories:** Engage in hands-on experimentation through dedicated laboratory sessions, applying theoretical concepts to real-world scenarios and honing practical skills.
- 5. Internship/Capstone Project:** Apply your learning in a professional setting through an internship or capstone project, gaining valuable industry experience and making tangible contributions to the field.
- 6. Expert Faculty Guidance:** Benefit from mentorship and guidance from experienced faculty members and industry experts, ensuring a high-quality learning experience and career support.
- 7. Career Preparation:** Prepare for diverse career paths in the space industry, research institutions, government agencies, and beyond, equipped with the skills and knowledge needed to excel in the field.





## LEARNING OUTCOMES

At the successful completion of this program student will be able to

**LO1.** Design and develop satellite communication systems, demonstrating a strong understanding of core principles and practical applications.

**LO2.** Establish themselves as professionals in Space Science and Technology, equipped with the knowledge and skills to excel in various roles within the industry and research sectors.

## ELIGIBILITY CRITERIA

- Students pursuing undergraduate or postgraduate studies in engineering, science, or related fields.
- Undergraduate students can opt for the course, with the duration extended to one year to accommodate their academic schedule.
- Postgraduate students or graduates in engineering, science, or related stream.
- Professionals working in aerospace, defence, and related industries.

## KEY INFORMATION

- Duration: Six months
- Total credits: 22
- Programme Code: ST16136
- Course Type: Certificate
- Mode of study: Full time
- Campus: Vidyavihar – Mumbai
- Institute: Centre for Space Science & Technology, K J Somaiya College of Engineering

## LIST OF COURSES

- Introduction to Space Science
- Satellite Communication Systems
- Launch Vehicles and Propulsion system
- Data Science and Remote Sensing
- Satellite Mission Design
- Space Exploration Laboratory
- Data Science and Remote Sensing Laboratory
- Mini-Project and Internship

**Course Fees: ₹ 10,000/- (₹ Ten Thousand only)**

## Contact us

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