DEPARTMENT OF

SPACE, PLANETARY AND ASTRONOMICAL SCIENCES AND ENGINEERING

Indian Institute of Technology Kanpur

2025-26 | Placement Brochure

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WELCOME MESSAGE

Prof. Amitesh Omar
Head of Department

The Space Planetary and Astronomical Sciences & Engineering (SPASE) is among the newest departments at IIT Kanpur. The department extends a warm welcome to you. Presently, PG programs are offered in the department. Our teaching methodology incorporates experiments and hands-on experience without sacrificing the rigour of the subject. The department's curriculum is multidisciplinary. Students are introduced to fundamental concepts such as fluid mechanics, radiative processes, and orbital dynamics, trained to understand optical, radio, and X-ray instruments, and the analysis of data relevant to space science & technology. Our students join us with diverse academic backgrounds with UG/PG degrees in computer science, electrical engineering, mechanical engineering, physics, mathematics, and geophysics. Our faculty members have led major projects of national and international importance and are collaborating with startups, industries and various government organizations like DST, ISRO, and DRDO. In presenting our students to your esteemed organization, I am convinced that you will find them to be well-prepared, brimming with enthusiasm, and capable of becoming future leaders.

WELCOME MESSAGE

Prof. Soumyabrata Chakrabarty
Placement Coordinator

It is my great privilege and gratification to welcome you to the Students' Placement Office as a faculty coordinator of the Department of SPASE at IIT Kanpur. Our department hosts a vibrant community of talented students and researchers, driven by the inquisitiveness and enthused by the challenges of exploring the frontiers of space science and technology which is in line with the new space policy of Govt. of India, 2023.

In the Department of SPASE, our curriculum blends the rigorous theoretical foundations with hands-on experience in cutting-edge research and engineering applications related to the space science and Engineering. Students are trained in multidisciplinary domains including man-made spacecraft engineering, planetary exploration, astronomical instrumentation, space mission planning and risk assessment, and computational modelling. Their learning is enriched through active participation in national and international research collaborations, internships with premier organisations, and projects addressing real-world scientific and engineering challenges.
We being associated with the students' placement office, it is our earnest endeavour to serve as a bridge between our students and the professional world, enabling our esteemed students to contribute meaningfully to the aspiring space start-ups, industry, and research institutions. We take the pride in nurturing a culture of excellence, innovation, and moral responsibility, ensuring that our graduates are not only technically skilful but also equipped to lead and acclimate in a rapidly evolving global landscape of space science and technology.
We warmly invite organisations involved in the field of space science and Engineering to engage with our students to explore their capabilities, and become a part of their journey from the campus to career. We, together, can contribute to advancing the frontiers of space technology, exploration, planetary science, and astronomical research.
I look forward to fruitful collaborations and a successful placement season.

ABOUT US

The Department of Space, Planetary & Astronomical Sciences & Engineering (SPASE) at IIT Kanpur is dedicated to advanced education and research in space science, planetary exploration, and astronomy. It brings together cutting-edge work in instrumentation, observations, data analysis, and theoretical modeling.

SPASE offers postgraduate and doctoral programs, along with a minor for undergraduates, and promotes interdisciplinary learning at the intersection of science and engineering. Key research areas include planetary science, astrophysics, multi-wavelength astronomy, remote sensing, and space instrumentation.

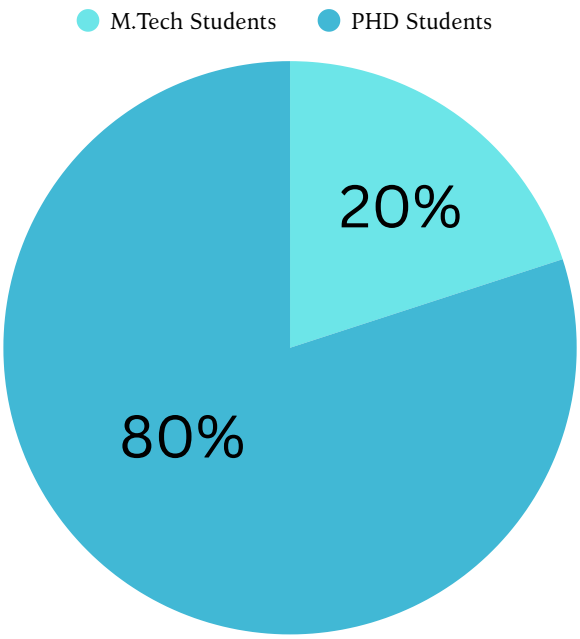
The department also actively engages in public outreach to foster awareness and enthusiasm for space and astronomy among students and the general public.

DEGREE OFFERED AND DEMOGRAPHICS

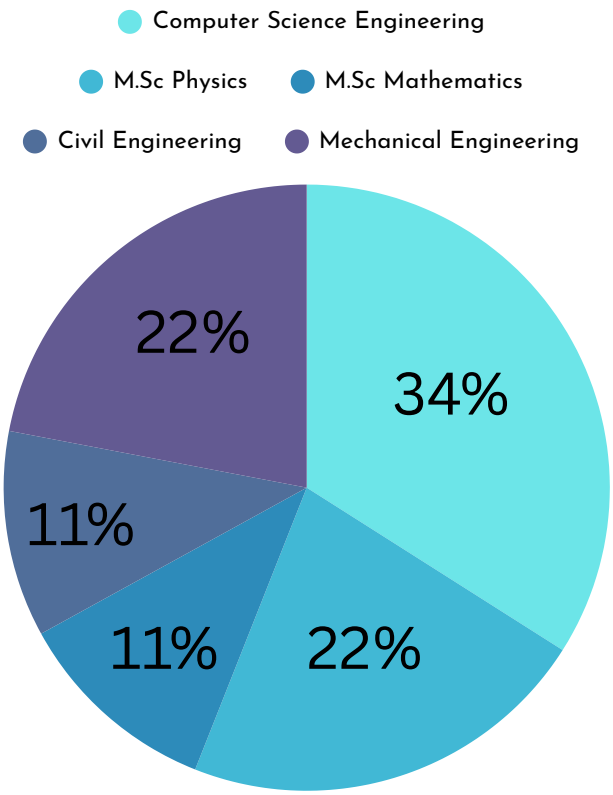
01 MINOR FOR UG STUDENTS

02 M.TECH

03 PHD



Degree Demographics



Academic Background Demographics

ACADEMIC COURSE LIST

COMPULSARY COURSES

- Introduction to Celestial Observational Techniques
- Introduction to Celestial Mechanics
- Introduction to Radiative Processes in Space
- Mathematical Techniques in Space Science and Engineering
- Numerical Techniques in Space Science and Engineering
- Space Instrumentation Laboratory

OPEN ELECTIVE

- Planetary Remote Sensing
- Introduction to Plasma Astrophysics
- Planetary Geomorphology : Processes and Landscapes

DEPARTMENT ELECTIVE

- Introduction to Manmade Satellite System and its Environment
- Optical Instrumentation Laboratory
- Introduction to Fluid Mechanics in Space
- Introduction to Geology: Measuring the Heartbeat of a Planetary Body
- Statistical Methods and Applications in Space Science
- Introduction to Mathematical Transforms Applications in Space Science
- Space Environment and Space Systems
- Study of Compact Object using Real Space Data (Astrosat)
- Introduction to Space and Astronomy Instrumentation
- Radio Astronomy
- Radio Astronomy Laboratory
- High Energy Astrophysics of Binary Star Systems
- Stars and Stellar Evolutions

SOFTWARE & UTILITIES

SIMULIA
CST STUDIO SUITE
THE COMPLETE SOLUTION FOR ELECTROMAGNETIC SIMULATION

LAXPC Software

BASH
THE BOURNE-AGAIN SHELL

MATLAB

ENVI

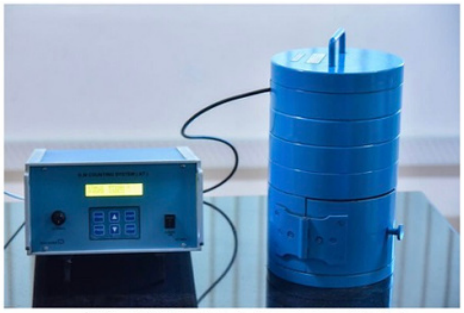
Artemis Capture

LABS

01.

Space Instrumentation Laboratory

The course provided hands-on experience on instrumentation techniques related to astronomy, planetary and space sciences and engineering.



02.

Study of Compact Object using Real Space Data (Astrosat)

Students used data of LAXPC instrument.
This data was used to drive basic physical
properites of the black hole and Neutron star X-ray bianries like
temperature, inner disk radii, source energy
spectrum state: soft or hard, spectrum timing properites,
thermonuclear burst, Neutron star spin frequency ,
flux variation and others.

03.

Optical Instrumentation Laboratory

The provided comprehensive knowledge on instrumentation techniques related to astronomy, planetary and space sciences and engineering.

04.

Radio Instrumentation, Observing Techniques and Data Analysis

This course provided comprehensive knowledge on instrumentation, observing techniques, and data analyses related to radio astronomy via tutorials and lab experiments.

OUR FACULTY

Research Interests
Galaxy astrophysics, Radio & Optical astronomy instrumentation

Amitesh Omar

Research Interests
Planetary science , Granular Mechanics , Contact Mechanics ,
Applied Mechanics

Ishan Sharma

Research Interests
"Astrophysical transients, jets, compact objects, Galactic Center, Life in the Universe"

Kunal P. Mooley

Research Interests
Radio Astronomy, Interferometry, Astronomical Instrumentation and Space Weather

Mugundhan V.

Research Interests
Cosmology, Astrophysics, Cosmic Rays, X-ray Astronomy, Nuclear Fusion at low energies

Pankaj Jain

Research Interests
Characterization of Exoplanets: direct imaging, transmission spectroscopy.
*Adaptive optics & wavefron control techniques.
*Ground & space-based optical & infrared instrumentation.

Prashant Pathak

Research Interests
Solar Physics, Space Weather, Radio Astronomy, Plasma Physics, Radio Wave Propagation, Data Science, Imaging Algorithms

Rohit Sharma

Research Interests
Cosmology, non-linear large scale structure, non-linear dynamics.

Sharvari Nadkarni Ghosh

Research Interests
Space Weather interaction of Spacecrafts, Computational Electromagnetics, Design and development of Antennas for Radio Telescopes and Microwave Sensors

Soumyabrata Chakrabarty
Professor of Practice

Research Interests
Gravitation theory, extragalactic astronomy and astronomical database management

Ajit Kembhavi
Distinguished visiting professor

Research Interests
Satellite dynamics and control, space robotics, and dynamics of aerospace structures

Arun Misra
Distinguished visiting professor

Research Interests
Neutron stars, Pulsars, Radio Transients, The Galaxy & Interstellar Medium, Epoch of Reionization, Instrumentation, Radio Astronomy Techniques, Noise & Statistics.

Avinash Deshpande
Distinguished visiting professor

Research Interests
Granular Matter, soft impact dynamics, planetary cratering

Hiroaki Katsuragi
Distinguished visiting professor

Research Interests
X-ray binaries, Accretion disk and jet connection, X-ray flares in microquasars, HFQPOs, Thermonuclear bursts and instrumentation.

J. S. Yadav
Distinguished visiting professor

Research Interests
Planetary Science, Orbital Dynamics

Renu Malhotra
Distinguished visiting professor

Research Interests
Astrobiology, Microbe-Mineral Interaction, Microbial Ecology

Yamini Jangir
Distinguished visiting professor

Research Interests
Galactic and Extragalactic Astrophysics (Theory, Idealised/Cosmological Simulations & Observations)

Sandeep Kumar Kataria
DST Inspire Faculty

STUDENTS' SECTION

Gaurav Kumar

Research Interests
Generative AI in Adaptive optics

Soumek Pattnaik

Research Interests
Space situational awareness

Ganesh Jaiswal

Research Interests
Solar Physics

Ashwin

Research Interests
Pulsar, Computational Astrophysics

Anunnya Gudhenia

Research Interests
Passive Radars

Teg Bahadur

Research Interests
Binder Finding to Increase the Strength of Moon Soil

Shubhangi Singh

Research Interests
Geological Mapping of Planetary Surfaces

Shubham Bhausaheb Khose

Research Interests
Solar Physics

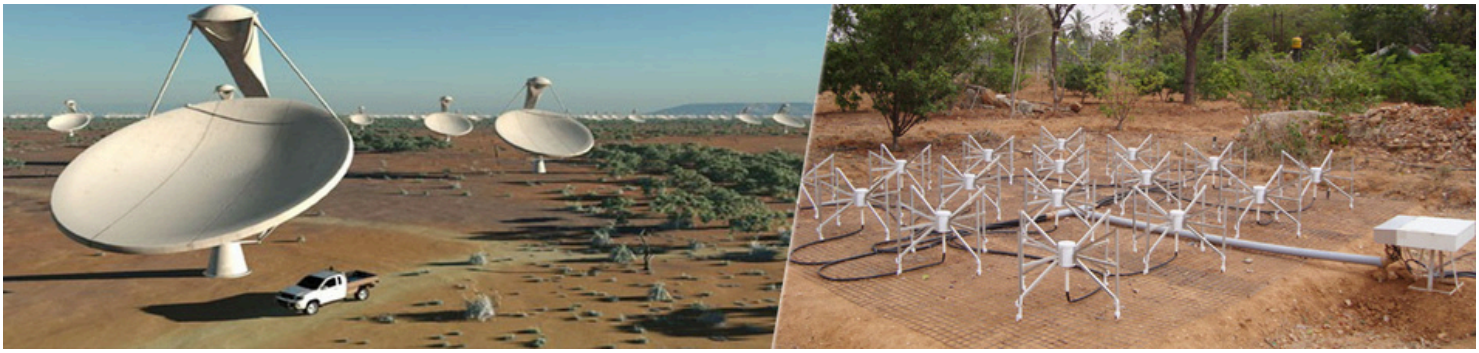
Abel George A

Research Interests
Magneto HydroDynamics

PROJECTS

The Sky-Watch Array Network (SWAN) for education, research and strategic applications

- Developing an Indian VLBI Network demonstrator
- Project towards extending GRAPES-3's Functionality to higher energies through the deployment of a radio array
- Square Kilometre Array as a project scientist
- Spacecraft charging simulation for satellites
- Building Radio Array (RAY) at IIT Kanpur for solar observations
- Collaborations with the SUIT instrument onboard the Aditya L1 Mission
- Developing an astrobiology cubesat to understand the adaptations of microbes in space environment
- Developing a low-frequency radio interferometer to detect transients and exoplanets



CONTACT US

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