



MEDI-CAPS UNIVERSITY, INDORE
DEPARTMENT OF PHYSICS
Value Added Course

Importance of Jupiter for earth and solar system

UNIT -I

Solar system: Introduction to solar system, planets and their moons, astronomical length and time scale, brief description about big-bang, material, star, and galaxy formation, observable universe.

UNIT –II

Importance of Jupiter: Detailed description about the planet Jupiter, including mass, volume, components, its moons, and asteroid belt. Importance of the Planet.

UNIT -III

Optical instruments: Different components of optical instruments, types of lenses and mirrors and their applications in various optical instruments, such as camera and telescope.

UNIT -IV

Telescope: Construction of a telescope, different types of telescopes – Hubble telescope, James Wabe telescope, and their roles in unravelling scientific facts regarding the Universe.

Hands-on: Using a telescope to observe different planets and their moons.

UNIT -V

Observation of Jupiter: Observing the planet Jupiter and its largest moons.



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References

1. Simon, J. L.; Bretagnon, P.; Chapront, J.; Chapront-Touzé, M.; Francou, G.; Laskar, J. (February 1994). "Numerical expressions for precession formulae and mean elements for the Moon and planets". *Astronomy and Astrophysics*. 282 (2): 663–683.
2. Kindy, David. "Amateur Astronomer Discovers New Moon Orbiting Jupiter". *Smithsonian Magazine*. Retrieved March 8, 2022.
3. Walsh, K. J.; Morbidelli, A.; Raymond, S. N.; O'Brien, D. P.; Mandell, A. M. (2011). "A low mass for Mars from Jupiter's early gas-driven migration". *Nature*. 475 (7355): 206–209.
4. Overbye, Dennis (August 23, 2022). "How the Webb Telescope Expanded My Universe - As new images of Jupiter and a galactic survey spring forth from NASA's new observatory, our cosmic affairs correspondent confesses he didn't anticipate their power". *The New York Times*.
5. Roth, Lorenz; Downer, Bethany (October 14, 2021). "Hubble Finds Evidence of Persistent Water Vapour Atmosphere on Europa" (Press release). *ESA Hubble*. European Space Agency.

Course Outcomes (Cos):

CO ₀₁	Students will be able to understand the solar system
CO ₀₂	Students able to understand the importance of the planet Jupiter
CO ₀₃	Students gain the basic knowledge about the construction of different optical instruments, including telescope.
CO ₀₄	They will come across the different components of a telescope and their applications.
CO ₀₅	Students will be able to understand the use of a telescope in observing different planets and their moons.