VIVEKANANDA MAHAVIDYALAYA, BURDWAN
WEST BENGAL, INDIA
NAAC Accredited B+ College with PG in Chemistry
(Affiliated to The University of Burdwan)

ADD ON COURSE

On

Fundamentals of Geometrical Optics

Organized By

DEPARTMENT OF PHYSICS
(Under the aegis of IQAC)

Date : From 16.08.2023 to 18.10.2023
(30 Hours of Classes)

Registration Link for Participation: https://forms.gle/qKEEKLTDxHZdgsuL8

Email: hodphysics@vmbdn.ac.in

Visit us on : www.vmbdn.in

No registration fee for participation

*** Certificate will be provided to the registered participants only after the satisfactory fulfilment of the course requirements.**

Detailed Course Description:

Geometrical optics is the study of light in its simplest form by considering light as rays. Light rays travel in straight lines until they encounter an interface (such as a mirror or a lens) where they may be redirected by reflection and refraction. This course describes the physical principles that determine how rays behave at various interfaces. These principles are used to model simple optical systems. Natural optical phenomena (rainbows, mirages, total-internal reflection, etc.) and classic optical systems (prisms, telescopes, microscopes, etc.) will be analyzed throughout the course. Linear systems will be introduced to analyze more complex optical systems. This course provides the fundamental knowledge needed for optical engineering and optical system design.

Learning Outcomes:

Upon completion of this course, students should understand the physical principles underlying geometrical optics, especially the relationship between rays, wave fronts and electromagnetic waves. They should understand how light propagates through "most" optical systems – where "most" refers to optical systems that are not affected by the wave nature of light. They should be able to analyze and design simple optical systems such as telescopes, imagers, microscopes etc.

For example, students should be able to:

- Determine the behaviour of a ray (reflection/refraction angles and amplitudes) at any optical surface.
- Design an imaging system with a desired resolution, field-of-view and magnification.
- Model a complex optical system using paraxial ray tracing.
- Identify fundamental limits and aberrations in an optical system.

Evaluation:

Upon the conclusion of this course, students will be required to appear in an examination to demonstrate their understanding and knowledge of the subject. The syllabus of the examination will likely cover all the topics discussed in the course.