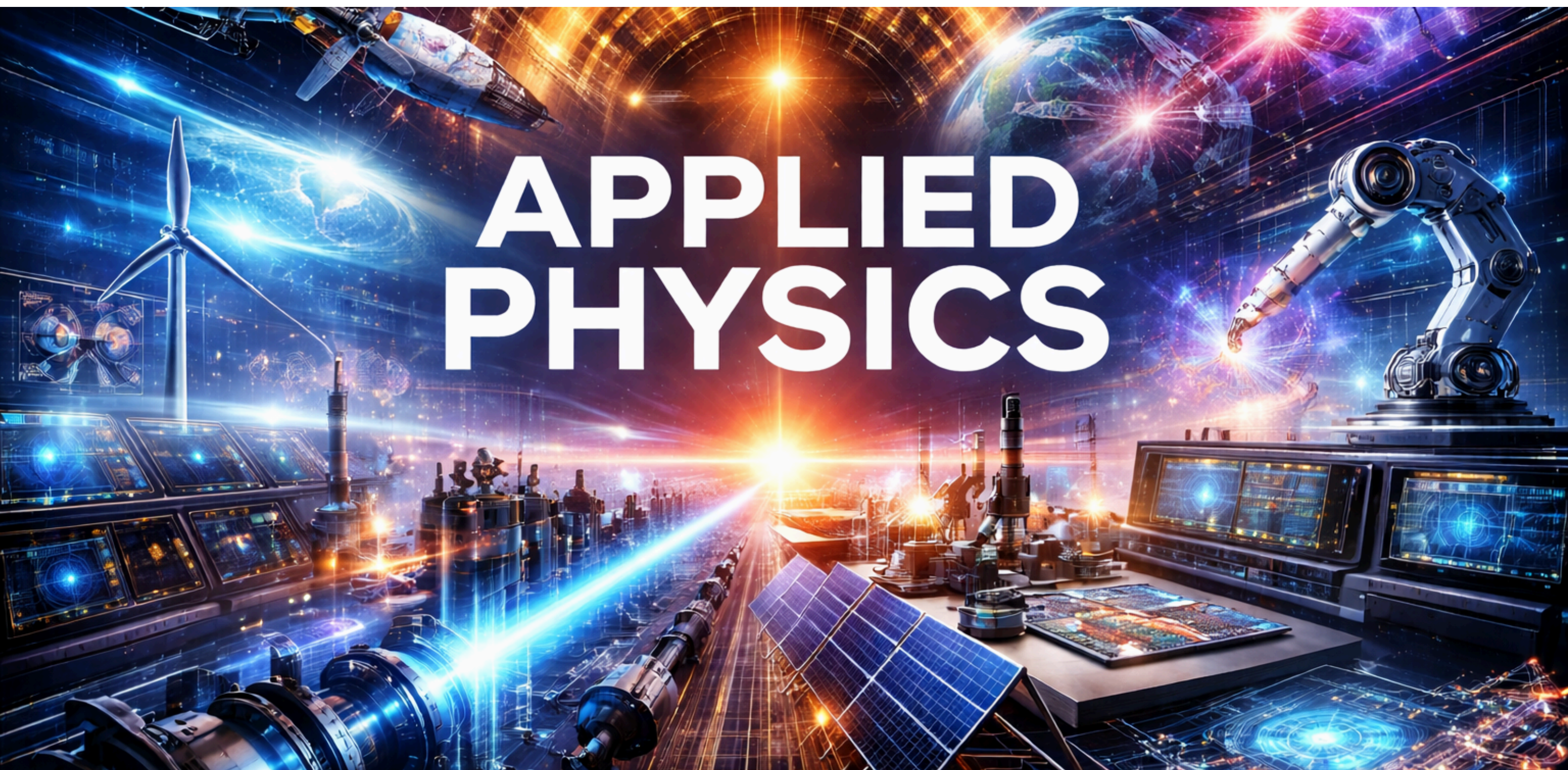




Department of Applied Physics
Faculty of Technology & Engineering
The Maharaja Sayajirao University of Baroda



APPLIED PHYSICS

About the Applied Physics Department

Established in 1973, the Department of Applied Physics at The Maharaja Sayajirao University of Baroda (MSU) is one of the premier departments in India offering industry-relevant postgraduate education in Applied Physics and Materials Science. Located in Vadodara—one of India's major educational and industrial hubs—the department is known for its strong academic foundation, cutting-edge research, and excellent student outcomes.

The department is part of a Grants-in-Aid university, accredited with NAAC A+ grade, and supported by prestigious funding agencies such as UGC, DST-FIST, AICTE, and DAE-BRNS. Our programs are designed to bridge the gap between fundamental physics and real-world technological applications.

Why Choose Applied Physics at MSU

- Where Physics Meets Technology, Innovation, and Industry
- Direct connection between theory and technology - Skills aligned with industry, R&D labs, and emerging technologies - Ideal pathway for PhD, teaching, PSU jobs, and high-tech industry roles
- industry-relevant and advanced tech. papers offered, such as Non-Destructive Testing, Physical Techniques in Industries, Quantum Technology & Space Technology - Exposure to advanced instrumentation and fabrication techniques - Active research culture with interdisciplinary collaboration - Excellent track record in NET, GATE, PhD admissions, and industry placement

Programs Offered

1. M.Sc. Applied Physics (2 Years) (Grant in Aid)

Eligibility: B.Sc. (Applied Physics/ Physics / Electronics)

Program Highlights:

Strong foundation in classical, quantum, and electromagnetic theory - Hands-on training in electronics, optics, lasers, fiber optics, and instrumentation - Industry-oriented modules: NDT, PTI, advanced electronics, device physics - Final semester project dissertation focused on research or industry problems

Career Opportunities:

Research & Development (R&D) - Semiconductor and electronics industry - Optical & photonics industry - Teaching, PhD, national competitive exams (NET/GATE)

2. M.Sc. Materials Science (Nanotechnology) (2 Years) (Higher Payment)

Eligibility: B.Sc. (Applied Physics/ Physics / Chemistry / Mathematics / Electronics)

OR

BE / B.Tech (Any branch) / B.Pharm

Program Highlights:

Specialization in nanomaterials, nanofabrication, and characterization - Strong blend of physics, chemistry, and computational techniques - Extensive laboratory exposure to XRD, spectroscopy, thin films, and nanofabrication - Major & minor project work aligned with current industrial and research trends

Career Opportunities:

Nanotechnology & advanced materials industry - Semiconductor, energy, and biomedical sectors - Research laboratories and PhD programs in India & abroad

3. PG Diploma in Solid State Electronics (1 Year) (Grant in Aid)

Eligibility: B.Sc. (Applied Physics/ Physics / Electronics)

Focus Areas: - Semiconductor devices - Analog & digital electronics - Hands-on PCB and device-level training

Curriculum

M. Sc. Applied Physics Semester-wise Curriculum

Semester	Subject
I	<p>Mathematical Physics Mechanics-I (Quantum & Statistical) Electromagnetic Theory-I Classical Mechanics & Computational Techniques Laboratory Practicals & Viva</p>
II	<p>Mechanics-II Physics of Semiconductor Devices Electromagnetic Theory-II & Crystal Physics Modern Optics Electronics-I Practicals & Viva</p>
III	<p>Optical, Dielectric & Magnetic Properties of Materials Instrumentation Electronics-II Laser & Applications Elective (Quantum Technology/ Space Technology/ Nuclear and Polymer Physics / Computational Techniques) Laboratory & Viva</p>
IV	<p>Project Dissertation Electronics-III Fiber Optics & Applications Non-Destructive Testing Physical Techniques in Industry Electives (Crystal Technology/ Nanotechnology / Luminescence / Electron Optics & Applied Optics) Laboratory & Viva</p>

M. Sc. Materials Science (Nanotechnology) Semester-wise Curriculum

Semester	Subject
I	<p>Materials Science Physics of Nanomaterials – I Chemistry of Materials Scientific Computing & Simulation – I Practicals (Physics & Chemistry)</p>
II	<p>Physics of Nanomaterials – II Synthesis of Nanomaterials Nanobiotechnology Scientific Computing & Simulation – II Practicals</p>
III	<p>Characterization of Nanomaterials Nanocomposites & Applications Nanofabrication Advanced Numerical Methods for Nanofluids Practicals</p>
IV	<p>Major Project Dissertation - Minor Project Dissertation</p>

Research Facilities, Student Life & Testimonials

Research Areas

- Condensed Matter Physics & Nanomaterials
- Atomic & Molecular Physics
- Thin Films, Sensors & Device Fabrication
- Optics, Lasers & Photonics
- Polymer Nanocomposites
- Theoretical Physics
- Complex Systems

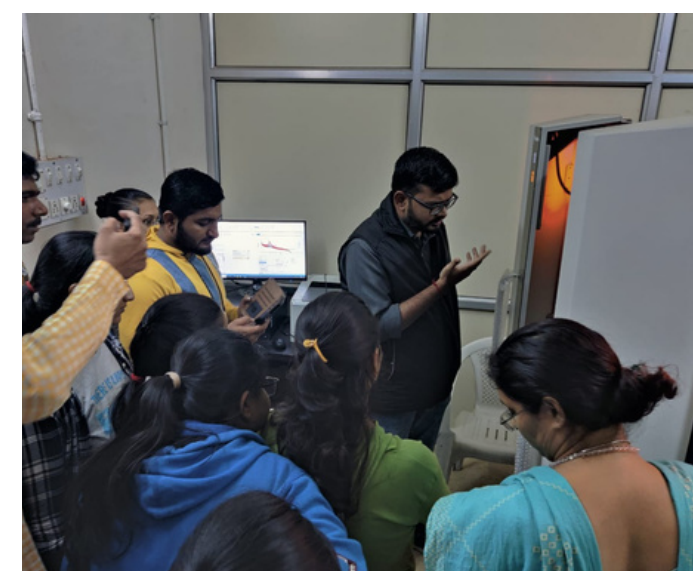
Sophisticated Instrumentation

- X-Ray Diffractometer (XRD)
- DSC, TG-DTA, FTIR, UV-Vis Spectroscopy
- RF & DC Magnetron Sputtering Systems
- Electron Beam Evaporation
- Tunable Laser, PL Spectroscopy
- Wire & Die Bonder, PCB Pick-and-Place Machine



Student Development

- Academic tours to ISRO, PRL, IPR and other premier institutes
- Guest lectures by industry and research experts
- Hands-on training on advanced instruments
- Tech-fests, competitions, and sports activities



Student Testimonials

“The Applied Physics department gave me hands-on exposure to advanced instruments like XRD and sputtering systems, which helped me secure a PhD position in a foreign university.” — Alumni, M.Sc. Applied Physics

“The Nanotechnology program perfectly blends physics, chemistry, and real lab work. The project experience was crucial for my industry placement.” — Alumni, M.Sc. Materials Science (Nanotechnology)

**Admission Through
GCAS Only**

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**No Entrance Test
for Admission**

Website: <https://msubaroda.ac.in/academics/FTE/department/APHY>