

ady.
ADYAPAN

Adyapan School

Nano Technology



Duration - 2 months

Industry
Certification



Skill India Certified

250+
Partner Companies

From atoms to application - master Nanotechnology.

From nanoscale science to real-world applications - become industry-ready.

This immersive program builds a comprehensive understanding of nanotechnology from the ground up- covering the physics and materials science that govern the nanoscale, the fabrication techniques used to build nanostructures, the characterization tools used to measure them, and the biomedical, electronic, and energy applications transforming industry. Students complete live projects at each stage and conclude with a capstone nano-enabled product concept.

8

MODULES

30+

PROGRAM OFFERINGS

20,000+

STUDENTS

250+ PARTNERED COMPANIES

ABOUT ADYAPAN SCHOOLS

Where education meets real-world impact

Not just a course — a platform to launch
your career.

Adyapan Schools was built with a single conviction:
learning works best when it happens in the real world.
We partner with top companies, mentors, and industry
platforms to ensure every student graduates with a
portfolio of work that speaks louder than a certificate.

Our programs combine rigorous coursework with live
client projects, giving you the skills and proof-of-work
that employers actually want.

MISSION

To equip ambitious learners with
practitioner-level digital
marketing skills through mentor-
led, project-based education that
bridges the gap between learning
and earning.



VISION

To be India's most trusted
launchpad for the next generation
of marketing leaders — defined
not by degrees but by the real
work.



Everything you need to grow fast

PROGRAM HIGHLIGHTS



Live Industry Projects

Work on campaigns for real brands alongside your coursework. Build portfolio projects that prove your expertise to employers.



1-on-1 Mentorship

Dedicated mentors from Google, Microsoft, Mastercard and more. Get personalized guidance and industry connections.



AI-Powered Marketing

Learn cutting-edge AI tools alongside evergreen fundamentals. Stay ahead of the curve in a rapidly evolving landscape.



Dual Certification

Earn both a Course Completion and Internship Certificate – accredited by Skill India Digital Hub and NSDC.



Internship Guarantee

Graduate with an internship completion certificate from a live brand project. Concrete, resume-ready proof of work.



Industry Network

Join a network of alumni at Amazon, Google, Adobe, Microsoft. Access exclusive hiring events and referral opportunities.

8 weeks. 8 modules. Infinite impact.

WEEK 1

Introduction to Nanoscience & Essential Laboratory Technologies

- Discussion of curriculum
- Overview of nanoscience and nanotechnology
- Applications across medicine, electronics, energy, and materials science
- Introduction to solid-state physics and crystal structures, Bravais lattices, symmetry, and X-ray diffraction using Bragg's Law
- Essential laboratory technologies: cleanroom and contamination control, vacuum system principles, the electromagnetic spectrum, and how electron beams are generated and used in nanotechnology



WEEK 2

Nanoscale Characterization

- SEM: operating principles, sample preparation and coating, imaging modes, and measurement demonstrations
- EDS/EDX: pairing with SEM to obtain elemental composition data, sample preparation considerations, and quantitative analysis of results
- TEM and cryo-TEM: how the instrument achieves atomic resolution, the critical differences between TEM and SEM sample preparation, and the advantages of cryo-TEM for biological and soft-matter samples
- Spectroscopy tools for nanomaterials characterization: XPS, optical spectroscopy, micro-CT



WEEK 3

Nanomaterials

- Classification of nanomaterials by dimensionality
- Top-down vs. bottom-up synthesis strategies
- Properties that emerge at the nanoscale and their application in energy storage, environmental remediation and healthcare
- Introduction to nano biomaterials and hybrid nanocomposites and surface functionalization strategies
- How composition governs performance in sensing and delivery applications



8 weeks. 8 modules. Infinite impact.

WEEK 4

Nanobiomaterials, Nanomedicine & Nanotoxicology

- Biomedical applications of nanomaterials
- Nano-diagnostics: quantum dot fluorescent probes, lab-on-chip microfluidic devices, and how size, shape, and surface chemistry govern biodistribution and cellular uptake
- Mechanisms by which nanoparticles interact with biological systems, factors determining cytotoxicity and genotoxicity
- Ethical, regulatory, and biosafety frameworks for nanomedicine: international standards, risk assessment protocols, and the challenges



WEEK 5

Nanofabrication I

- Why vacuum is essential, and the operating principles, performance ranges, and uses of mechanical pumps, turbopumps, and cryopumps
- Physical vapor deposition by thermal evaporation and e-beam evaporation
- Sputter deposition: RF and DC sputtering mechanisms, target-substrate geometry, plasma generation, and how sputtering enables deposition of materials that resist thermal evaporation
- Chemical and plasma-enhanced vapor deposition: ALD, CVD, and PECVD



WEEK 6

Nanofabrication II

- Photolithography using UV exposure and photoresists, electron-beam lithography, and FIB milling and cross-sectioning
- Hot embossing for polymer substrates and molecular self-assembly as a bottom-up route to ordered nanostructures without a lithographic mask
- Isotropic vs. anisotropic wet chemical etching, RIE, DRIE, and selectivity and etch rate considerations in device fabrication
- Introduction to MEMS and NEMS: principles of electromechanical systems, sensor and actuator design, semiconductor fundamentals, and PN junction behavior, and fabrication challenges at the nanoscale



8 weeks. 8 modules. Infinite impact.

WEEK 7

Semiconductor Physics, Nano-Optics & Quantum Science

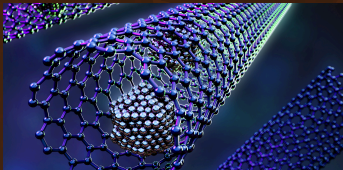
- Semiconductor device physics: doping mechanisms, PN junctions, diode and transistor operation, and how nanoscale dimensions operate
- Nano-optics and plasmonics: light-matter interaction, surface plasmon resonance, photonic crystals, optical confinement in quantum dots, and applications in biosensing, photovoltaics, and quantum communication
- Quantum mechanics fundamentals: superposition, quantum tunneling, uncertainty principle, quantum confinement effects, and qubits
- Quantum computing and nanodevices: encoding and processing and the intersection of next-generation nanotechnology applications



WEEK 8

Emerging Trends, Sustainability & Capstone Project

- Nanotechnology in renewable energy and AI integration: nanomaterial-enhanced solar cells, supercapacitors, hydrogen production catalysts
- Green nanotechnology and sustainability: life-cycle analysis of nanomaterials, biodegradable nanocarriers, bioinspired fabrication, and frameworks for responsible innovation in the field
- Future directions in nanoelectronics, quantum materials, and metamaterials: beyond-silicon transistors, neuromorphic computing, engineered metamaterials with negative refractive index
- Capstone project



WHO THIS IS FOR

This course is perfect for

Students & Career Switchers

Aspiring Nanotechnology & Materials Science Professionals

Engineering, Physics, Chemistry & Biotechnology Students

Researchers & Lab Professionals

Electronics, Biomedical & Energy Sector Enthusiasts

Innovation-Driven Individuals in Advanced Materials & Nano-Science

CERTIFICATIONS



ALUMNI NETWORK

Our alumni work at world-class companies

Amazon

Adobe

Google

Autodesk

Microsoft

Deloitte

Your career switch is one click away.

Ready to begin? Apply at adyapanschool.com or email us at support@adyapan.com

Apply Now