EDUFYI TECH SOLUTIONS

NANO TECHNOLOGY

Advanced Professional Program · 22 Sessions · 6 Capstone Projects

PROFESSIONAL TRACK | VIRTUAL INTERNSHIP | WIPRO DICE ID ACCREDITED



- **Nanoscale Metrology**
- **Quantum Devices**
- **Nano Biomaterials**
- **Nanorobotics & AI**

OUR ALUMNI WORK AT

Microsoft | Capgemini | Deloitte | IBM | Adobe | EY | Google Cloud

WHO ARE WE

Engineering Careers at the Nanoscale

At Edufyi Tech Solutions we transform the educational journey of college students through cutting-edge virtual internships and deep-tech training. Every learner works under industry mentorship and ships six real-time and capstone projects per domain — built on live lab data, simulation toolchains and publication-grade documentation.

Our Nano Technology track has been rebuilt for 2026: it now spans classical nanoscience fundamentals through quantum materials, nanophotonics, nano-bio interfaces, AI-accelerated materials discovery and semiconductor device fabrication — the exact stack hiring teams at research labs, fabs and deep-tech startups screen for.

22
Structured sessions across 6 learning tracks

06
Capstone & real-time industry projects

150+
Hiring partners for internship placement

24×7
Mentor support and lifetime LMS access

THE SCALE OF THE CRAFT



WHY CHOOSE US

18 Reasons Learners Pick Edufyi

Self-Paced Mastery
Choose your speed, master the skills

Industry Project Playground
Live problem statements from R&D teams

Resume & Aptitude Grooming
ATS-ready profiles + aptitude drills

Mentors from MNCs
Scientists, engineers & startup founders

100% Placement Assistance
Referrals, mocks and interview loops

Exclusive R&D Content
Leading MNC research learning modules

Unlimited Mocks & GDs
Technical, HR and group discussions

24×7 Dedicated Support
Never blocked on a doubt again

Wipro DICE ID Certificates
Globally recognised accreditation

150+ Internship Partners
Placement into real engineering teams

1:1 Counselling Sessions
Personalised career roadmapping

MNC Add-on Certifications
Microsoft, Cisco, IBM, Adobe & more

Bootcamps & Webinars
Certified deep-dive intensives

Lifetime Personalised LMS
Progress analytics that stay with you

Recorded Lectures Anytime
Revisit every session on demand

Performance-Based Stipend
Skill up and cash in

Live Expert Mentorship
Weekly interactive masterclasses

Hiring Partner Access
Direct pipelines to recruiters

COURSE CURRICULUM · 22 SESSIONS

Track A — Foundations

S1

Induction & Lab Onboarding

Program roadmap, LMS walkthrough, simulation toolchain setup (COMSOL / LAMMPS / Quantum ESPRESSO trial stacks), safety and scientific-writing standards.

S2

Introduction to Nanoscience & Nanotechnology

Fundamentals of nanotechnology, history of nanoparticles, why size matters, surface-to-volume ratio, quantum confinement and the top-down vs bottom-up paradigms.

S3

Solid State Physics for Nanoscale Engineers

Crystallography, reciprocal lattice, scattering experiments, electron waves in crystals, band theory, superconductivity and magnetism.

S4

Advanced Tools for Nanoscience

Cleanroom practice, vacuum science, cryogenics and the instrumentation ecosystem behind modern nanoscale research.

S5

Nanoscale Measurement Techniques

Light and electron microscopy (SEM/TEM), scanning probe microscopy (AFM/STM), optical spectroscopy and diffraction-based characterisation.

Tracks are cumulative — each session ends with a graded lab notebook entry reviewed by your mentor.

COURSE CURRICULUM · 22 SESSIONS

Track B — Materials & Bio

S6

Nano Materials

How size, surface area and nanoscale forces give rise to a rich variety of materials: nanoparticles, nanowires, thin films, aerogels and metamaterials.

S7

Nanomaterials Synthesis

Sol-gel, CVD, ALD, hydrothermal and self-assembly routes; templating, precursors, mesoporous materials and their industrial applications.

S8

Nano Biomaterials — Part 1

Self-assembly principles in biology, biomimetic design, implant surfaces and tissue-engineering scaffolds at the nanoscale.

S9

Nano Biomaterials — Part 2

Targeted drug and gene delivery, encapsulation chemistry, theranostics and real-life clinical translation of nanomedicine.

S10

Nanotoxicology & Responsible Nano

How nanoparticles enter the body, cellular and tissue barriers, dose metrics, risk assessment, regulation and sustainable life-cycle design.

Track B includes a wet-lab simulation project on nanoparticle drug-carrier design.

COURSE CURRICULUM · 22 SESSIONS

Track C — Devices & Quantum

S11

Micro / Nano Electromechanical Systems (MEMS & NEMS)

Sensors, actuators, resonators, energy harvesters and the mechanics of moving structures at micro and nano scales.

S12

Nanofabrication Techniques

Photolithography, EUV, e-beam and nanoimprint lithography, etching, deposition and yield engineering in a modern fab.

S13

Semiconductors & Advanced Nodes

Doping, junctions, MOSFET scaling, FinFET and gate-all-around nanosheet architectures, and the physics behind Moore's-law successors.

S14

Device Physics

Engineering aspects of semiconductor nanomaterials, transport phenomena, contacts, reliability and device fabrication workflows.

S15

Nano-Optics: Theory & Practice

Near-field optics, photonic crystals, plasmonics, metasurfaces and nanoscale light-matter interaction.

Track C is delivered with fab-floor case studies from semiconductor hiring partners.

Track D — Frontier & Career

S16	**Quantum Science**	Cryogenics, superposition, entanglement, interference, qubit modalities and the quantum-materials pipeline.
S17	**2D Materials & Heterostructures**	Graphene, TMDCs, MXenes, hBN, twistronics and van der Waals stacking for next-generation electronics.
S18	**Nanoelectronics for AI Hardware**	Memristors, spintronics, neuromorphic crossbars and in-memory computing for energy-efficient AI accelerators.
S19	**AI-Driven Materials Discovery**	Machine-learning interatomic potentials, DFT-plus-ML screening, generative materials models and lab automation.
S20	**Nano for Energy & Environment**	Perovskite and tandem solar cells, solid-state batteries, catalysis, hydrogen storage, water purification membranes.
S21	**DNA Nanotech & Molecular Machines**	DNA origami, molecular motors, nanorobotics and programmable matter at the biology-engineering interface.
S22	**Career Launchpad & Support**	Interview tricks and tips, most-preferred technical questions, resume and cover-letter preparation, portfolio review.

ADVANCED MODULES ADDED IN 2026

Frontier Topics You Won't Find in a Basic Syllabus

Twistronics & Moiré Physics

Magic-angle graphene, flat bands, correlated superconductivity.

Plasmonics & Metasurfaces

Flat optics, SERS sensing, sub-wavelength beam shaping.

Quantum Dots & Single-Photon Sources

Colloidal QDs, QLED displays, quantum communication emitters.

Nanorobotics & Micro-Swimmers

Magnetically steered carriers for targeted therapy.

Spintronics & Magnonics

MRAM, spin-orbit torque, low-power memory logic.

Digital Twins & Multiscale Simulation

DFT → MD → FEM coupled modelling workflows.

Self-Healing & Smart Coatings

Stimuli-responsive, antifouling and superhydrophobic surfaces.

Lab-on-Chip & Nanofluidics

Microfluidic diagnostics, point-of-care biosensing.

Nano Standards, IP & Safety

ISO/TC 229, patents, EHS and responsible innovation.

Cryo-EM & Atom Probe Tomography

Atomic-resolution structural and compositional mapping.

Additive Nano-Manufacturing

Two-photon polymerisation and roll-to-roll nanoprinting.

Space & Defence Nanomaterials

Radiation-hard coatings, aerogels, nano-satellite structures.

TOOLS & INSTRUMENTS

The Stack You Will Actually Operate

Characterisation

- SEM / FE-SEM
- TEM & HRTEM
- AFM / STM
- XRD & XPS
- Raman & FTIR
- Cryo-EM basics

Fabrication

- Spin coating
- CVD & ALD
- E-beam lithography
- Sputtering
- RIE etching
- Cleanroom protocol

Simulation

- COMSOL Multiphysics
- Quantum ESPRESSO / VASP
- LAMMPS MD
- Lumerical FDTD
- MATLAB / Simulink
- ANSYS

Data & AI

- Python & NumPy
- scikit-learn
- PyTorch
- Materials Project API
- ImageJ / Gwyddion
- Origin & LaTeX

Every tool is taught through guided labs, recorded walkthroughs and a graded deliverable — not slides.

ADVANCE INTERNSHIP PROJECTS

Six Capstones. Portfolio Proof.

01 Green Synthesis of Silver Nanoparticles

Synthesis, UV-Vis and XRD characterisation, antibacterial assay and a full lab report.

02 Perovskite Solar Cell Efficiency Study

Device stack simulation, defect analysis and optimisation of a tandem architecture.

03 Targeted Nano Drug Delivery Carrier

Liposome / polymeric carrier design with release-kinetics modelling and toxicity screening.

04 Graphene Field-Effect Biosensor

2D-material channel design, sensitivity modelling and a working detection prototype pipeline.

05 ML Model for Nanomaterial Property Prediction

Dataset curation from Materials Project, feature engineering and a deployed prediction notebook.

06 Plasmonic Metasurface Lens Design

FDTD simulation, nanoantenna array optimisation and a fabrication-ready layout.

Each capstone ships with a graded quiz, mentor code review, GitHub-ready documentation and a demo video.

WHERE THIS TAKES YOU

Careers, Industries & Growth

ROLES YOU CAN TARGET

- Nanotechnology Research Associate
- Semiconductor Process Engineer
- Materials Characterisation Analyst
- MEMS / Sensor Design Engineer
- Nano-Biotech R&D Associate
- Thin Film & Coatings Engineer
- Computational Materials Scientist
- Quantum Devices Trainee Engineer
- Failure Analysis Engineer

INDUSTRIES HIRING

Semiconductors & Fabs

Pharma & Medical Devices

Energy & Batteries

Aerospace & Defence

Research Labs & Academia

Advanced Coatings & Materials

6

Portfolio projects on your resume

4+

Stackable industry certifications

150+

Internship & hiring partners

ACCREDITATION

Certificates That Recruiters Recognise



Powered by Wipro DICE ID · blockchain-verifiable



One per capstone, with project title and duration



Domain internship credential for academic credit

PROFESSIONAL MNC CERTIFICATIONS ALSO INCLUDED

- **Microsoft Azure Fundamentals**
- **Cisco Cybersecurity**
- **IBM Internet of Things**
- **Autodesk Certified User**
- **Adobe Certified**
- **Intuit ESB**
- **QuickBooks**

All certificates are globally recognised, shareable on LinkedIn and verifiable by employers.

HOW IT WORKS

From Enrolment to Offer Letter

01

Counselling

1:1 session to map your background to the right track.

02

Enrolment & LMS

Lifetime personalised LMS, cohort and mentor allocation.

03

22 Sessions

Live plus recorded learning across four tracks.

04

6 Capstones

Build, document and defend real engineering projects.

05

Certification

Wipro DICE ID accredited plus MNC add-on credentials.

06

Placement

Mocks, referrals and access to 150+ hiring partners.

Eligibility & Format

Open to B.E / B.Tech / M.Tech / B.Sc / M.Sc students in Physics, Chemistry, Materials, ECE, EEE, Mechanical and Biotech.

100% virtual · flexible weekday and weekend batches · no prior nanotechnology experience required.

ACCREDITED CERTIFICATES

Certificates You Earn

Every learner receives government and industry aligned certificates, verifiable by employers and shareable on LinkedIn.



Internship Completion

Awarded on successful completion of the industrial internship.



Project Completion

Issued for every capstone project built and defended.



Industrial Training

MSME · ISO · NSDC aligned industrial training credential.

VERIFIED CREDENTIALS

Wipro DICE ID accredited · MSME & ISO aligned · QR verifiable · Recognised by 150+ hiring partners

Global MNC Certifications

Learners are prepared for and certified through globally recognised professional certification programs from leading technology companies.



CISCO

Cybersecurity CCST



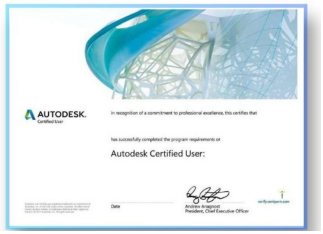
MICROSOFT

Azure Fundamentals



IBM

Internet of Things



AUTODESK

Certified User



ESB

Entrepreneurship

AUTHORISED PARTNERS

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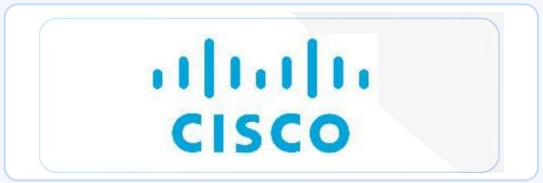
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- QuickBooks Certified User

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