

Smart AI & Robotics Lab Proposal

A Vision for Future-Ready Education



Recognized Certifications



ISRO

IIT
Indian Institute
of Technology

IIT



**SKILL
DEVELOPMENT**

CONTACT DETAILS

🌐 www.phntechnology.com ✉ contact@phntechnology.com

📍 Address: PHN Technology Private Limited, Pune

☎ **+91 86005 86005**

Table of Contents

01	Why PHN ? _____	01
02	India's Leading Academic & Industry Experts _____	02
03	Smart AI & Robotics Lab _____	04
04	Curriculum and Outcomes _____	05
05	Exclusive Certifications for Students _____	15
06	Student Life Changing Opportunities _____	16
07	Teacher Professional Development _____	17
08	Benefits for Schools _____	18

Why PHN ?

With over a decade of experience in the education ecosystem, PHN Technology has established strong collaborations with premier universities, government organizations, and industry leaders. To further strengthen our learning ecosystem, we have onboarded distinguished experts from IITs, ISRO, academia, and industry onto our Advisory Board.

Their collective expertise plays a pivotal role in shaping our curriculum, ensuring that students benefit from practical learning, industry exposure, innovation-driven experiences, and future-ready skills that go beyond conventional classroom education.

“Bringing the Best of Academia, Industry & Innovation Together.”



ISRO



**IIT
BOMBAY**



**IIT
MADRAS**



**IIT
JAMMU**



**IIT
PATNA**



**IIT
GUWAHATI**



**NIT
DELHI**



**NIT
WARANGAL**



**NIT
MANIPUR**



**NIT
PUDUCHERRY**



**IIIT
VADODARA**



**IIIT
SURAT**



**IIIT
BHOPAL**

BELOP
Defence PSU and a subsidiary of
Bharat Electronics Ltd. (BEL).

BELOP



NSDC



TCIL

ITI LIMITED
(A Government of India Undertaking)

**ITI
LIMITED**

India's Leading Academic & Industry Experts



A. E. Muthunayagam
Ex-Founder Director,
ISRO Liquid Propulsion
Systems Centre (LPSC)

Experience: 38+ years

- Secretary, Department of Ocean Development (DOD), Government of India (now MOES)
- Chairman, Board of Governors, IIT Madras
- Executive Vice President, Kerala State Council for Science, Technology & Environment
- Leader of indigenous propulsion technologies for Indian space missions
- Pioneer of deep-sea mining and ocean energy projects for India



Mr. B. S. Gugale
Retired Senior
Scientist, DRDO

Experience: 36+ years

- Project Head – Rocket System
- Group Director – Quality Assurance, DRDO Projects
- Contributor to DRDO CAPSI Projects
- Life Member – Aeronautical Society of India (ASI)
- Life Member – High Energy Materials Society of India (HEMSI)
- Life Member – Indian National Society for Aerospace Related Mechanisms (INSARM)



Dr. A. G. Nagarkar
Ex-DRDO Scientist

Experience: 37+ years

- Defence scientist and retired Joint Director at the Ministry of Defence
- **Core Expertise** - 2Defence Product R&D, Scientific Process Development, Armour Technology & Innovation, Intellectual Property & Patent Filing, Scientific Publishing & Representation
- First Prize, Indian Science Congress – Thiruvananthapuram
- First Prize (Twice)- National Science Day – Best Scientific Presentations



Dr. Shirish Ravan
Former Head, UN-SPIDER
ISRO & C-DAC Veteran

Experience: 40+ years

- He spent 18 years in senior leadership roles at the United Nations, contributing to UN-SPIDER and UN-COPUOS (Committee on the Peaceful Uses of Outer Space).
- Served for 12 years with prominent Indian organizations including ISRO, C-DAC, and other national scientific institutions
- With over 50 international publications, Dr. Ravan's work bridges science and policy making space applications accessible



Prof. K. K. Pant
Director, IIT
Roorkee

Experience: 35+ years

- Former Dean (Faculty), IIT Delhi
- Visiting Scientist, Auburn University, USA | Adjunct Professor, University of Saskatchewan, Canada
- Honorary Faculty, University of Queensland, Australia
- Editor of leading journals including Chemical Engineering Science and J. of Food Science & Technology



Dr. Laxmidhar Behera
Director, IIT Mandi

Experience: 30+ years

- Ph.D. in Electrical Engineering – IIT Delhi
- Post-Doctoral Research – GMD (Fraunhofer), Germany
- Visiting Researcher – ETH Zurich and University of Ulster, UK
- Key contributor to national initiatives in AI-driven research and Indian Knowledge Systems



Prof. Dharmendra Singh
Director,
IIIT Vadodara

Experience: 30+ years

- Ph.D. in Electronics Engineering – IIT (BHU) Varanasi
- Former Senior Professor – IIT Roorkee
- Visiting Scientist – DLR Germany, Niigata University Japan
- Coordinator – Drone Research Center & Common Research Technology Hub, IIT Roorkee



Dr. Parvaiz A. Shiekh
DST INSPIRE
Faculty, IIT Delhi

Experience: 10+ years

- Ph.D. in Bioengineering, Indian Institute of Technology Kanpur, India
- Fulbright Fellow, University of California Los Angeles (UCLA), USA
- ILBS-TATA Emerging Leader Program – Junior Fellow, ILBS New Delhi, India
- Research Exchange Fellow, University College London, UK

India's Leading Academic & Industry Experts



Prof. Rajiv Misra
Professor, IIT Patna

Experience: 25+ years

- Lead, Smart City Research Group, IIT Patna
- Convener, Academic Committee, Vishlesan I-Hub (NMICPS)
- Principal Investigator for major projects in AI, 6G, and IoT.
- Expertise in Artificial Intelligence, 6G, Internet of Things, and Edge AI



Dr. Abhishek Singh
Professor,
IIT Dhanbad

Experience: 17+ years

- 178 publications, spanning peer-reviewed journals, book chapters, and conference proceedings.
- 2,555 citations with an h-index of 26, per IRINS.
- Expertise in solid mechanics, elastodynamics, and wave propagation, central to interdisciplinary modeling research
- Asian Education Award – Best Mathematics Professor of the Year (2021)



Dr. Jyotindra Narayan
Assistant Professor,
IIT Patna

Experience: 15+ years

- Honorary Research Associate – Imperial College London
- Multiple international and national awards including SK Mitra Memorial Award
- 100+ journal and conference publications
- Research contributions include internationally recognized work in exoskeleton design, gait assistance, and human-in-the-loop control schemes.



Dr. Satendra Kumar
Assistant Professor,
IIT Patna

Experience: 13+ years

- Co-Inventor of 'Universal Electronic Circuit Node' Patent (2024)
- Author of multiple publications in IEEE Transactions on Wireless Communications, Vehicular Technology, and Systems Journal
- He achieved academic distinction at IIT Kharagpur, NIT Raipur, and UPTU
- He holds a patent on universal electronic circuit nodes enabling seamless sensor integration



Dr. Arijit Roy
Assistant Professor,
IIT Patna

Experience: 12+ years

- Co-founder, SensorDrops Networks Pvt. Ltd.
- Advisory Board Member: NANCY, TALON, TERMINET
- Contributor, IEEE ComSoc eHealth IoT initiatives
- His research contributes to secure beyond 5G LTE and Industry 5.0 initiatives.



Dr. Rahul Thakur
Assistant Professor,
IIT Roorkee

Experience: 8+ years

- Founder, Internet of Things (IoT) Lab, IIT Roorkee
- Co-Founder, Pandabyte Innovations Pvt. Ltd.
- Mentor & Educator for next-gen hardware entrepreneurs and students
- Best Researcher in Cellular Networks – ScienceFather, 2024
- Ph.D & M.S., IIT Madras



Dr. Gautam Kumar
Assistant Professor,
NIT Delhi

Experience: 12+ years

- 2nd Place, ISRO's Innovative Idea & Design Competition – NIT Rourkela, 2019
- MHRD Scholarship Recipient, Ph.D. – NIT Rourkela (2016–2021)
- MHRD Scholarship Recipient, M.Tech – CUSB (2014–2016)
- Professional Member, IEEE (since 2023) – Membership No. 93359073
- Professional Member, ACM (from 2025) – Membership No. 1110693



Dr. Prakash Khodke
Former Director,
MSBTE

Experience: 35+ years

- Central Project Advisor, National Project Implementation Unit
- A+ Confidential Reports from the Principal Secretary, Govt. of Maharashtra, for excellence in educational contributions.
- First Class Honors across academic qualifications.
- Research expertise in Agricultural Waste to Paper Production

Smart AI & Robotics Lab

Our Smart AI & Robotics Lab is thoughtfully designed with advanced technologies and automated systems to deliver a seamless, hands-on learning experience. It empowers students to explore artificial intelligence, robotics, and innovation through real-world applications and interactive experimentation.

Note: Furniture is not included in the lab setup.



Scan
to experience
the Smart AI
& Robotics Lab



Curriculum and Outcomes

Our comprehensive, age-appropriate curriculum, reviewed and validated by leading industry experts and academic leaders, integrates Artificial Intelligence, Robotics, Coding, IoT, and Design Thinking through experiential, project-based learning. Students build practical skills, apply concepts to real-world challenges, strengthen critical thinking and creativity, and develop the confidence to thrive in an innovation-driven world, while aligning with the vision of NEP 2020.



Curriculum and Outcomes

GRADE
2

2
PROJECTS
32
ACTIVITIES

LEARNING FOCUS

Explore Smart Technology


LEARNING THEME

Sense & Respond


TECHNOLOGY DOMAINS COVERED


STEM Education



Basic Electronics



Sensor Technology



Automation Fundamentals



Embedded Systems (Foundation)



Product Design & 3D Printing



Smart City Technologies



Robotics Foundation


KEY SKILL IMPROVEMENTS


Scientific Observation



Logical Thinking



Problem Solving



Creativity & Innovation



Engineering Design Thinking



Team Collaboration



Communication Skills



Hands-on Technical Skills


CURRICULUM-ALIGNED SUBJECT OUTCOMES

Science: Understanding circuits, sensors, and electricity

EVS: Water conservation and environmental responsibility

Mathematics: Sequencing, patterns, classification

English: STEM vocabulary and communication skills

Art: Creative model building and design thinking

ALIGNMENT WITH NEP2020


Experiential Learning



Activity-Based Learning



Competency-Based Education



Inquiry-Based Learning



Multidisciplinary Integration



Creativity & Innovation Focus



Environmental Awareness

Curriculum and Outcomes

GRADE
3

2
PROJECTS
32
ACTIVITIES

LEARNING FOCUS

Build Smarter Solutions


LEARNING THEME

Smart Environment


TECHNOLOGY DOMAINS COVERED


STEM Education



Smart Agriculture Technologies



Embedded Systems



Sensor Technology



Environmental Monitoring



Automation & Control Systems



Product Design & 3D Printing



Robotics Foundation


KEY SKILL IMPROVEMENTS


Scientific Investigation



Systems Thinking



Problem Solving



Engineering Design



Analytical Thinking



Team Collaboration



Observation & Data Interpretation



Hands-on Technical Skills


**CURRICULUM-ALIGNED
SUBJECT OUTCOMES**

Science: Plant growth, soil, water cycle, weather, sensors, energy and automation.

EVS: Agriculture, environmental conservation, sustainable farming and water management.

Mathematics: Measurement, sequencing, comparison, observation, data recording and logical reasoning.

English: Scientific vocabulary, observation reports, presentations and communication.

Art: Model building, farm design and creative engineering.

ALIGNMENT WITH NEP2020


Experiential Learning



Inquiry-Based Learning



Competency-Based Education



Activity & Project-Based Learning



Design Thinking & Innovation



Multidisciplinary Learning



Environmental Sustainability



Scientific Temper & Systems Thinking

Curriculum and Outcomes

GRADE
4

2
PROJECTS
32
ACTIVITIES

LEARNING FOCUS
Engineering in Action

LEARNING THEME
Motion & Mechanism

TECHNOLOGY DOMAINS COVERED

STEM Education

Mechanical Engineering

Motion & Mechanism

Embedded Systems Foundation

ESP32 Controller Basics

Motor Control Systems

Product Design & 3D Printing

Industrial Automation Foundation

KEY SKILL IMPROVEMENTS

Engineering Thinking

Mechanical Reasoning

Logical Problem Solving

Structural Design Skills

Controller Understanding

Team Collaboration

Observation & Analysis

Hands-on Technical Skills

**CURRICULUM-ALIGNED
SUBJECT OUTCOMES**

Science: Force, motion, work, energy transformation, simple machines and mechanical systems.

Mathematics: Measurement, estimation, spatial reasoning, geometry and logical sequencing.

EVS: Machines in daily life, transportation and industrial applications.

English: Engineering vocabulary, observation records, presentations and technical communication.

Art: Structural model building, creative product design and engineering drawing.

ALIGNMENT WITH NEP2020

Experiential Learning

Competency-Based Education

Inquiry-Based Learning

Project-Based Learning

Design Thinking

Engineering Design Process

Multidisciplinary Learning

Innovation & Creativity

Curriculum and Outcomes

GRADE
5



2
PROJECTS



32
ACTIVITIES



LEARNING FOCUS

Creating Smart Connected Systems



LEARNING THEME

Data & Monitoring



TECHNOLOGY DOMAINS COVERED



Internet of Things (IoT)



Biomedical Engineering



Embedded Systems



Sensor Technology



Smart Healthcare



Electronics & Instrumentation



Product Design



Digital Health Technologies



KEY SKILL IMPROVEMENTS



Observation & Data Interpretation



Logical & Analytical Thinking



Sensor Integration Skills



Engineering Design Thinking



Computational Thinking



Problem Solving



Collaboration & Presentation Skills



**CURRICULUM-ALIGNED
SUBJECT OUTCOMES**



Science: Human body systems, health, temperature, electricity, sensors and measurement.



Mathematics: Data collection, graphs, measurement, comparison and interpretation.



Social Science: Healthcare systems, community wellbeing and technology in society.



English: Scientific vocabulary, presentations, communication and technical reporting.



Art & Design: Healthcare product design, display layouts and prototype modelling.



ALIGNMENT WITH NEP2020



Experiential Learning



Competency-Based Education



Inquiry-Based Learning



Project-Based Learning



Design Thinking



Computational Thinking



Multidisciplinary Learning



Health & Wellbeing Education

Curriculum and Outcomes

GRADE
6



3
PROJECTS

32
ACTIVITIES



LEARNING FOCUS

Innovate Through Robotics



LEARNING THEME

Robotic Movement



TECHNOLOGY DOMAINS
COVERED



Robotics Engineering

Embedded Systems

Mobile Robotics

Medical Robotics

Space Technology

Servo & Motion Control

Product Design & 3D Printing

Mechatronics

Engineering Design Thinking



KEY SKILL
IMPROVEMENTS



Systems Thinking

Computational Thinking

Engineering Problem Solving

Programming Fundamentals

Multi-System Integration

Innovation & Creativity

Team Collaboration

Analytical Observation



CURRICULUM-ALIGNED
SUBJECT OUTCOMES



Science: Force, motion, energy, robotics, human body, sensors and intelligent systems.



Mathematics: Coordinates, logic, measurement, data interpretation and algorithmic thinking.



Social Science: Space exploration, healthcare technologies and engineering innovations.



English: Technical communication, presentations, documentation and scientific vocabulary.



Art & Design: Robotic prototyping, prosthetic design and engineering visualization.



ALIGNMENT WITH
NEP2020



Experiential Learning

Inquiry-Based Learning

Competency-Based Education

Project-Based Learning

Design Thinking

Computational Thinking

Interdisciplinary Learning

Innovation & Scientific Temper

Curriculum and Outcomes

GRADE
7



3
PROJECTS

32
ACTIVITIES



LEARNING FOCUS

Industry Meets Innovation



LEARNING THEME

Automation & Vision



TECHNOLOGY DOMAINS COVERED



Industrial Robotics



Artificial Intelligence



Machine Vision



Computer Vision



Internet of Things (IoT)



Wireless Communication



Renewable Energy Systems



Smart Manufacturing



Embedded Systems



KEY SKILL IMPROVEMENTS



Systems Integration



Computational Thinking



AI & Automation Awareness



Engineering Design



Wireless Communication Skills



Innovation & Critical Thinking



Team Collaboration



Industrial Problem Solving



CURRICULUM-ALIGNED SUBJECT OUTCOMES



Science: Electricity, energy conversion, robotics, artificial intelligence, sensors, light and communication systems.



Mathematics: Coordinate systems, logic, measurement, data analysis and algorithmic reasoning.



Social Science: Industrial Revolution, sustainable development, renewable energy and future technologies.



English: Technical presentations, scientific communication, documentation and industrial vocabulary.



Art & Design: Product design, robotic modelling, industrial design and engineering visualization.



ALIGNMENT WITH NEP2020



Experiential Learning



Competency-Based Education



Inquiry-Based Learning



Project-Based Learning



Design Thinking



Computational Thinking



Interdisciplinary Learning



Industry 4.0 Readiness



Innovation & Entrepreneurship

Curriculum and Outcomes

GRADE
8

5
PROJECTS
32
ACTIVITIES

LEARNING FOCUS

Master Autonomous Technologies


LEARNING THEME

Sensors, Flight & Control


TECHNOLOGY DOMAINS COVERED


Drone Technology



Autonomous Robotics



Embedded Systems



Aerospace Engineering Fundamentals



Sensor Engineering



Mechatronics & Navigation Systems



Product Design & 3D Printing



Engineering Measurement & Instrumentation


KEY SKILL IMPROVEMENTS


Systems Thinking



Engineering Design



Sensor Analysis & Calibration



Programming & System Integration



Analytical Thinking



Innovation & Creativity



Computational Thinking



Team Collaboration


CURRICULUM-ALIGNED SUBJECT OUTCOMES

Science: Force, pressure, electricity, motion, sound, light, sensors, flight principles and environmental monitoring.

Mathematics: Measurement, coordinates, data analysis, graph interpretation, logical reasoning and estimation.

Geography: Remote sensing, mapping, navigation, weather observation and drone applications.

English: Technical communication, engineering presentations, scientific documentation and STEM vocabulary.

Art & Design: Drone modelling, robot chassis design, product aesthetics and engineering visualization.

ALIGNMENT WITH NEP2020


Experiential Learning



Competency-Based Education



Inquiry-Based Learning



Project-Based Learning



Design Thinking



Computational Thinking



Multidisciplinary Learning



Innovation & Entrepreneurship



Future Technology Readiness

Curriculum and Outcomes

GRADE
9



5
PROJECTS

32
ACTIVITIES



LEARNING FOCUS

Experience Industry 4.0



LEARNING THEME

IoT Safety & CNC Automation



TECHNOLOGY DOMAINS COVERED



CNC Manufacturing



Industrial Robotics



Embedded Systems



Industrial IoT (IIoT)



Smart Wearable Technology



GPS & Navigation Systems



Sensor Engineering



Mechatronics



Smart Factory Technologies



KEY SKILL IMPROVEMENTS



Precision Engineering



Industrial Problem Solving



Manufacturing Process Understanding



Sensor Integration



Data Analysis & Monitoring



Systems Integration



Design Thinking



Team Collaboration



CURRICULUM-ALIGNED SUBJECT OUTCOMES



Science: Electricity, electromagnetism, force, motion, sensors, energy, industrial applications and safety systems.



Mathematics: Coordinate geometry, measurement, ratios, graph interpretation, logical reasoning and precision calculations.



Social Science: Industrial Revolution, manufacturing systems, transportation safety and sustainable industrial development.



English: Technical documentation, industrial communication, presentations and engineering reporting.



Art & Design: CAD concepts, CNC drawing, industrial product design and engineering visualization.



ALIGNMENT WITH NEP 2020



Experiential Learning



Competency-Based Education



Inquiry-Based Learning



Project-Based Learning



Design Thinking



Computational Thinking



Industry 4.0 Readiness



Entrepreneurship & Innovation

Curriculum and Outcomes

GRADE
10



5
PROJECTS

32
ACTIVITIES



LEARNING FOCUS

Lead the AI Revolution



LEARNING THEME

Ai Robotics & HCI



TECHNOLOGY DOMAINS
COVERED



Artificial Intelligence



Robotics Engineering



Embedded Systems



Human-Machine Interaction



Voice Technology



Sensor Fusion



Microelectronics



Product Design & 3D Printing



Intelligent Automation



Smart Systems Engineering



KEY SKILL
IMPROVEMENTS



AI & Computational Thinking



Systems Integration



Advanced Programming Concepts



Engineering Design



Human-Centred Innovation



Critical Thinking & Problem Solving



Research & Presentation Skills



Entrepreneurship & Innovation



CURRICULUM-ALIGNED
SUBJECT OUTCOMES



Science: Artificial intelligence, electronics, control systems, embedded systems, sensors, automation and modern technologies.



Mathematics: Algorithms, logical reasoning, coordinate systems, data analysis, computational thinking and mathematical modelling.



Social Science: AI ethics, Industry 5.0, automation, emerging technologies and societal impact of intelligent systems.



English: Technical documentation, research reports, engineering communication, presentations and project documentation.



Art & Design: Industrial product design, robot aesthetics, user interface concepts and rapid prototyping.



ALIGNMENT WITH
NEP2020



Experiential Learning



Competency-Based Education



Inquiry-Based Learning



Project-Based Learning



Design Thinking



Computational Thinking



Innovation & Entrepreneurship



AI Readiness



Career-Oriented Learning



Multidisciplinary Education

Exclusive Certifications for Students

*“The right exposure at the right time
can shape a lifetime of opportunities.”*

When students are introduced to excellence early, they don't just earn certifications they gain the confidence, awareness, and direction to shape their own future.



ISRO

(Indian Space Research
Organisation)

IIT
Indian Institute
of Technology

IIT

(Indian Institute
of Technology)



**SKILL
DEVELOPMENT**

(National Skill Development
Corporation)

Student Life Changing Opportunities

At PHN Technology, we believe true education goes beyond textbooks it begins with early, meaningful exposure to the real world.

By introducing students to prestigious institutions like Indian Institutes of Technology, emerging technologies, and the evolving landscape of Industry 4.0 at a formative stage,

we empower them to think ahead, dream bigger, and act with purpose.

This early awareness equips students with the clarity, confidence, and direction needed to make informed career choices and build a future driven by innovation, skill, and

“Our aim is to ensure that every learner is empowered with the knowledge, exposure, and guidance needed to stay ahead in an ever-evolving world.”



**Selected students get
IIT Campus Visit**



Industry Visits



**Special Guidance from
IIT & Industry Experts**



**Learning Management
System (LMS)**

Teacher Professional Development

Teachers are often occupied with their day-to-day academic responsibilities, leaving little time to explore the latest advancements in education and technology. At PHN Technology, we bridge this gap through expert-led training, visits to premier institutions like IITs, and interactions with academicians and industry professionals. This exposure helps teachers adopt innovative teaching practices, integrate real-world insights into the curriculum, and better prepare students for future academic and career opportunities.

“Every empowered teacher creates a generation of confident learners.”



IIT Visit & In IIT Campus Technology Training



Teacher Training Program from IIT Professors, Scientists & Industry Experts

Benefits for Schools



**IIT-Level AI & Robotics Lab
Setup within the School**



**Training by India's Top
Professors for
Teachers & Students**



**Enhanced School Brand Value
& Industry Recognition**



**Future-Ready AI &
Robotics Curriculum**



**Stronger Admissions
Increased Parent Appeal**



**Participation in National
Competitions & Hackathons**



**Student Progress Tracking &
Continuous Assessments**



**End-to-End Academic &
Technical Support**



**Dedicated Trainer for
Seamless Implementation**

***“Where schools become brands,
and students become benchmarks of excellence.”***