

Empowering Higher Education Enabling the future workforce

Offering Industry Integration with UG Programs of Higher education institutions to develop industry ready talent pool.



INDUSTRY INTEGRATED PROGRAM



The world of engineering is in the midst of a profound transformation, characterized by advancements in technology and new age applications. In the swiftly evolving realm of engineering, traditional educational approaches often struggle to keep pace with the dynamic demands of the industry. Graduates frequently encounter a disparity between the theoretical understanding gained in classrooms and the practical expertise needed for real-world engineering challenges. This discrepancy impedes their seamless transition into professional roles, leaving them less than adequately prepared to tackle the complexities of contemporary engineering practices.

L&T EduTech is at the forefront of revolutionizing higher education, driven by a vision to equip students with the skills and knowledge needed to excel in the ever-evolving world of engineering and technology.

To meet the demands of a rapidly advancing industry, L&T EduTech has developed specialization programs blended with both technical and life skills, that are to be offered as Industry Integrated Programs by Universities and Colleges.



Industry Integrated Programs

Recognizing the demand – supply need in every industry sectors, L&T EduTech has developed a concept of Integrated Programs that can be offered by Institutions. These programs represent a paradigm shift in engineering education, offering a holistic approach that seamlessly integrates theoretical learning with hands-on experiences.

By combining cutting-edge curriculum with practical application, students are not only equipped with deep technical knowledge but also gain the crucial problem-solving skills demanded by the industry. This innovative approach ensures that graduates emerge as industry-ready professionals, poised to make meaningful contributions in their chosen fields of engineering.



Why Integrated Programs?

In today's dynamic engineering landscape, theoretical knowledge alone is no longer sufficient. Integrated Programs at L&T EduTech offer a unique blend of theoretical learning, hands-on experience, and industry exposure. This innovative approach ensures that graduates not only possess deep technical knowledge but also the practical skills and adaptability demanded by the modern workplace.

By integrating real-world projects, cutting-edge technologies, and industry insights, we bridge the gap between academia and industry, producing engineers who are not only proficient in their respective fields but also equipped to drive innovation and lead in a competitive global market.



BENEFITS FOR INSTITUTIONS

1

Industry
Integrated
Programs

2

Enriched
Curriculum
and Content

3

Strengthened
Industry
Collaboration

4

Diverse
Learning
Ecosystem

8

Realtime
Industry
Experience

7

Innovative
Teaching
Methods

6

Enhanced
Placement
Opportunities

5

Thought
Leadership



BENEFITS FOR STUDENTS

1

Mastery of
Industry-specific
technical skills

2

Enhanced
behavioral &
functional skills

3

Stronger
industry relevant
knowledge & skills

4

Exposure to
real world
industry projects
& methods

5

Learn from
industry experts
and practitioners

6

Earn an Industry
Specialization from
the industry leader

7

In-Depth knowledge
in specialized
engineering domains

8

Proficiency in
cutting-edge
technologies
and tools



List of Industry-Integrated Programs for B.E./B.Tech

Mechanical Engineering

1. Digital and AI Solutions for Oil & Gas and Process Plants
2. Digital Manufacturing using AI and CPS
3. Advanced Power Generation Systems

Civil Engineering

1. Multi Modal transportation Infrastructure with AI/ML
2. Integrated Building System Design using AI/ML
3. Digital Solutions for Industrial Building Design
4. Digital Transformation in Construction
5. Sustainability Practices in Construction
6. Structural System Design

Electrical and Electronics Engineering

1. Smart and Sustainable Power Engineering with AI Integration
2. Electrical Infrastructure for Smart Buildings and EV Charging
3. Microelectronics for Electric Vehicles
4. Industrial IoT and Smart Systems

Electronics & Communication Engineering

1. Semiconductor Design Framework for Industrial ICs
2. Industrial IoT and Smart Systems

Chemical Engineering

1. Chemical Engineering with Digital Analysis and AI Solutions

Safety Engineering

1. Practical Applications in Health and Safety Engineering

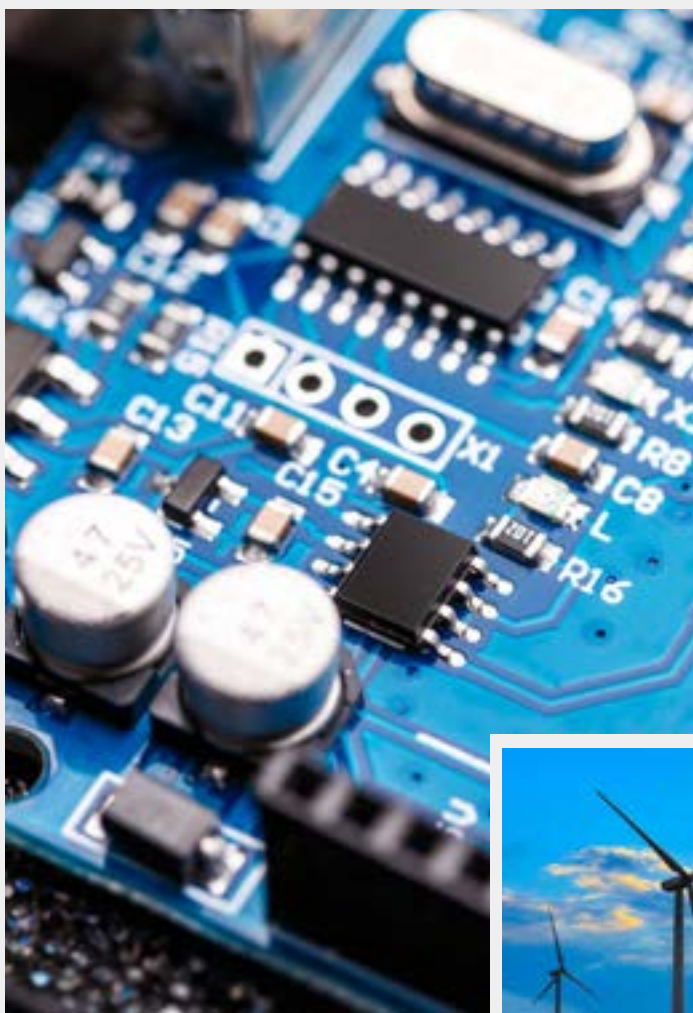
Electric Vehicle Engineering

1. Advanced Specialization in Electric Vehicles for EEE/ECE/E&I/Mechatronics Branches
2. Advanced Specialization in Electric Vehicles for Mechanical/Mechatronics/Chemical/Aeronautical Branches
3. Advanced Specialization in Electric Vehicles for CSE/IT Branches

IT / Computer Science Engineering

1. Agile Methodology with Cloud and DevOps
2. Data Engineering Tools
3. Full Stack Web Development
4. Data Analytics
5. Business Analytics
6. Cyber Security
7. Full Stack MEAN / MERN
8. AI Techniques & ML Algorithms
9. Applied Data Science With Python
10. Data-Driven Product Engineering

ELECTRICAL & ELECTRONICS ENGINEERING



Smart and Sustainable Power Engineering with AI Integration

Integration with B.E. / B.Tech.: EEE

The Smart and Sustainable Power Engineering with AI integration program is meticulously designed for Electrical Engineering students, equipping them with in-depth knowledge and skills to develop innovative, AI-driven, and eco-conscious solutions within the power engineering domain. This curriculum focuses on designing, managing, and optimizing power systems with an emphasis on efficiency, sustainability, and advanced technologies. The program spans a wide range of topics, including renewable energy integration, smart grid technologies, sustainable power generation, substation engineering, industrial power system analysis and the transformative role of Artificial Intelligence in these areas. Through AI applications, learners will explore predictive maintenance for smart grids, energy forecasting for renewables, fault identification in transmission lines, load flow analysis, demand side management and optimization of power distribution networks to enhance system performance. Graduates will emerge well-prepared to contribute to the advancement of intelligent, AI-enabled, and environmentally sustainable power solutions, shaping a smarter, greener, and more sustainable future.

Recommended Integrated Courses

Course Name	Category	Credits	Semester
Digital Enablement Basics for Engineers*	Functional Skills	3	I
Critical Thinking, Design Thinking, Leadership and Teamwork *	Behavioral/Functional Skills	3	II
Renewable Energy Technologies with AI Applications	Technical Skills	3	III
OH & UG Power Transmission Engineering & Distribution	Technical Skills	3	IV
Industrial Power System Analysis with AI Applications	Technical Skills	3	V
Substation Engineering: Design & Digital Concepts	Technical Skills	3	V
Practitioner's Approach to Power System Protection and Switchgear with AI Applications	Technical Skills	3	VI
Career readiness in Digital Era*	Behavioral Skills	3	VI
Smart Grid Technologies with Cloud Integration	Technical Skills	3	VII
Project Management for Professionals / Finance for Professionals	Functional Skills	3	VIII
Total Credits		30	

Mode of Delivery:

Self-paced learning + Expert session (VILT) – 30 hours, Project work – 15 hours

* Face-to-face instructor led sessions / VILT sessions – 45 hours
(including project work)



Smart and Sustainable Power Engineering with AI Integration

Integration with B.E. / B.Tech.: EEE

Job Roles

- ▶ Electrical Design Engineer – Power System
- ▶ Electrical Design Engineer – Renewable Energy
- ▶ Electrical Design Engineer – Protection system
- ▶ Electrical Design Engineer – Power Transmission
- ▶ Electrical Project Engineer
- ▶ Electrical Maintenance Engineer
- ▶ Electrical Procurement Engineer
- ▶ Electrical Design Engineer – Power Distribution & Smart Grid

Software Tools

- ▶ ETAP ▶ PVSyst ▶ SAM ▶ MATLAB
- ▶ MS Project

Skills

- ▶ Design and model the complete photovoltaic system manually and with different software tools like MATLAB, PVSyst & SAM.
- ▶ Design and model wind power generation manually and with different software tools - SAM software.
- ▶ Solar and Wind energy forecasting using AI tools.
- ▶ Relay coordination & short circuit analysis using ETAP software for different industrial use cases.
- ▶ Modelling and simulation of transmission lines by using MATLAB and ETAP.
- ▶ Selection and sizing of EHV cables.
- ▶ Develop the architecture of AC /DC microgrids.
- ▶ Implement a AI enabled demand-side management project in a smart home incorporating Automated Metering Infrastructure.
- ▶ Design of protection schemes for different electrical equipment.
- ▶ Selection and sizing of switchgear for any application.
- ▶ Substation design, digital concepts including various equipment selection and sizing calculations.
- ▶ Perform load flow, short circuit and stability analysis for power system networks supported with AI techniques.

Potential Recruiters



Electrical Infrastructure for Smart Buildings and EV Charging

Integration with B.E. / B.Tech.: EEE

The program Electrical Infrastructure for Smart Buildings and EV Charging is designed to empower Electrical Engineering students with advanced knowledge and skills in designing intelligent, efficient, and sustainable electrical systems for modern buildings. This comprehensive curriculum covers a diverse range of topics, including advanced electrical design principles, energy-efficient technologies, building automation, solar power integration, and the critical aspect of EV charging infrastructure. Students will gain in-depth insights into integrating EV charging systems seamlessly into smart building designs while addressing energy management and load balancing with sustainable solutions. By incorporating cutting-edge technologies, the program equips students to enhance the sustainability, comfort, and security of smart buildings while meeting the growing demand for electric vehicle support. Students will emerge as forward-thinking professionals capable of shaping the future of sustainable and innovative building solutions.

Recommended Integrated Courses

Course Name	Category	Credits	Semester
Digital Enablement Basics for Engineers*	Functional Skills	3	I
Critical Thinking, Design Thinking, Leadership and Teamwork*	Behavioral/Functional Skills	3	II
Electrical Power Distribution and Automation	Technical Skills	3	III
Integrated Approach to Building Services	Technical Skills	3	IV
Building Information Modeling	Technical Skills	3	V
Advanced Electrical System Design for Buildings	Technical Skills	3	V
Extra Low Voltage System Design for Buildings	Technical Skills	3	VI
Career Readiness in Digital Era*	Behavioral Skills	3	VI
EV Charging Infrastructure and Guidelines	Technical Skills	3	VII
Project Management for Professionals / Finance for Professionals	Functional Skills	3	VIII
Total Credits		30	

Mode of Delivery:

Self-paced learning + Expert session (VILT) – 30 hours, Project work – 15 hours

* Face-to-face instructor led sessions / VILT sessions – 45 hours
(including project work)



Electrical Infrastructure for Smart Buildings and EV Charging

Integration with B.E. / B.Tech.: EEE

Job Roles

- Design Engineer – Electrical & ELV for Smart Buildings
- Project Engineer – Electrical & ELV for Smart Buildings
- Procurement Engineer – Electrical & ELV for Smart Buildings
- Maintenance Engineer – Electrical & ELV for Smart Buildings
- Electrical Estimation Engineer
- Building Automation Engineer

Software Tools

- ETAP ► Revit ► MS Project

Skills

- Design of overhead power distribution system and power distribution system for factories
- Relay coordination & short circuit analysis using ETAP software for different industrial use cases.
- Understand the design concepts of different services in a building viz. HVAC Systems, Fire Protection & Life Safety Systems and Public Health Engineering (PHE) system.
- Develop a BIM model and check for clashes and resolve interferences in a building.
- Evaluate the integration of schedule and cost in BIM model using 4D and 5D.
- Design of electrical power distribution system for a high-rise building
- Electrical design calculations for sizing and selection of electrical equipment
- Application of various codes, standards, regulations to be followed.
- Design of CCTV System for a given building infrastructure
- Design of Access Control System in a building.
- Design of Public Address System
- Design of Building Management System
- Formulate various network cabling systems in any building.
- Design and test EV charging infrastructures, considering site selection, layout planning, electrical engineering aspects.
- Design frontend and backend convertors for EVSE.
- Apply international and national regulatory guidelines and safety standards in the installation, maintenance, and operation of charging stations

Potential Recruiters



Microelectronics for Electric Vehicles

Integration with B.E. / B.Tech: EEE

The Microelectronics for Electric Vehicles program is a comprehensive multidisciplinary course designed to equip learners with advanced knowledge and practical skills at the intersection of microelectronics and electric vehicle (EV) technology. This program delves into the core systems, components, and technologies driving the EV revolution. It covers foundational topics such as the types of EVs (battery electric, hybrid, and fuel cell), their critical components including battery packs, electric motors, power electronics, and charging systems, as well as the infrastructure required for efficient grid integration and charging. Advanced microelectronics topics focus on chip-based VLSI design, integrated circuit fabrication, and the development of microchips for EV-specific applications like power management and battery systems. Cyber-physical systems are explored in the context of autonomous driving, predictive maintenance, and V2V/V2I communication. The program also emphasizes the importance of battery management systems (BMS) for optimal performance, covering monitoring, balancing, state-of-charge estimation, thermal management, and fault detection. Automotive mechatronics integrates electronic, electrical, and mechanical systems to address modern automotive innovations like ADAS, engine control systems, and safety technologies. Additionally, the role of the Industrial Internet of Things (IIoT) in connected vehicles is highlighted, including real-time data acquisition, remote diagnostics, cybersecurity, and the integration of EVs into smart grids with vehicle-to-grid technologies. With a strong focus on both theoretical understanding and hands-on application, this program is ideal for students, researchers, and professionals aspiring to lead in the EV sector. By mastering the microelectronic technologies that underpin sustainable transportation, learners can contribute to advancing energy-efficient mobility solutions and addressing global challenges in eco-friendly transportation systems.

Recommended Integrated Courses

Course Name	Category	Credits	Semester
Digital Enablement Basics for Engineers*	Functional Skills	3	I
Critical Thinking, Design Thinking, Leadership and Teamwork*	Behavioral/ Functional Skills	3	II
Electric Vehicle Technology & Infrastructure	Technical Skills	3	III
Chip based VLSI Design and IC fabrication	Technical Skills	3	IV
Cyber Physical Systems for Industrial Applications	Technical Skills	3	V
Battery Management System for EV	Technical Skills	3	V
Automotive Mechatronics	Technical Skills	3	VI
Career Readiness in Digital Era*	Behavioral Skills	3	VI
IIoT and Connected Vehicles	Technical Skills	3	VII
Project Management for Professionals / Finance for Professionals	Functional Skills	3	VIII
Total Credits		30	

Mode of Delivery:

Self-paced learning + Expert session (VILT) – 30 hours, Project work – 15 hours

* Face-to-face instructor led sessions / VILT sessions – 45 hours
(including project work)



Microelectronics for Electric Vehicles

Integration with B.E. / B.Tech: EEE

Job Roles

- ▶ VLSI Design Engineer
- ▶ IC Design Engineer
- ▶ Embedded Systems Engineer
- ▶ Battery Management System (BMS) Engineer
- ▶ Power Electronics Engineer
- ▶ Automotive Software Engineer
- ▶ Cybersecurity Engineer

Software Tools

- ▶ Vivado design suite
- ▶ Xilinx ISE
- ▶ STM32IDE
- ▶ Thorny IDE
- ▶ MATLAB
- ▶ Thingspeak
- ▶ Jupiter notebook
- ▶ Edsim51
- ▶ Tinker CAD
- ▶ Arduino IDE
- ▶ Wokwi

Skills

- ▶ Understanding different types of EVs (Battery Electric, Hybrid, Fuel Cell).
- ▶ Knowledge of critical EV components such as battery packs, electric motors, power electronics, and charging systems.
- ▶ Expertise in chip-based VLSI design and integrated circuit fabrication.
- ▶ Development of microchips for EV power management and battery systems.
- ▶ Skills in battery monitoring, balancing, state-of-charge (SOC) estimation, thermal management, and fault detection.
- ▶ Knowledge of autonomous driving, predictive maintenance, and vehicle-to-vehicle (V2V) communication.
- ▶ Application of Industrial IoT (IIoT) for real-time data acquisition, remote diagnostics, and cybersecurity.
- ▶ Integration of electronic, electrical, and mechanical systems for engine control, safety technologies, and modern automotive innovations.
- ▶ Understanding vehicle-to-grid (V2G) technologies and smart grid integration for sustainable energy solutions.
- ▶ Hands-on experience in power converters, inverters, and motor controllers for EV applications
- ▶ Knowledge of secure vehicle communication protocols and remote monitoring systems.
- ▶ Proficiency in circuit simulation, PCB design, and embedded system development for EV microelectronics.

Potential Recruiters

EV Manufacturers:



Automotive Suppliers:



Semiconductor Companies:



Battery Manufacturers:



Charging Infrastructure Providers:



Technology Companies:



Industrial IoT and Smart Systems

Integration with B.E. / B.Tech: EEE, ECE & E&I

The Industrial IoT and Smart Systems stack of course is meticulously designed for Electrical Engineering students, offering an in-depth design and development skills required for Information and Communication Technology (ICT). This comprehensive curriculum encompasses various critical aspects of ICT, including private 5G Network architectures, Embedded computing, Integration of the Internet of Things (IoT) and futuristic solution based on AI. Graduates will emerge exceptionally well-prepared to conceptualize, implement, and proficiently manage modern businesses and organizations

Recommended Integrated Courses

Course Name	Category	Credits	Semester
Critical Thinking, Design Thinking, Leadership and Teamwork*	Behavioral/ Functional Skills	3	I
Programming Fundamentals for Engineers	Functional Skills	3	II
Industrial Applications of Microcontrollers - A Practice based approach	Technical Skills	3	III
Cyber Physical Systems for industrial Applications	Technical Skills	3	IV
Fundamentals of Microsoft Azure	Technical Skills	3	V
Applied Industrial IoT	Technical Skills	3	V
Drone Technology and its Transformative Applications - A Practioner's Perspective	Technical Skills	3	VI
Career Readiness in Digital Era*	Behavioral Skills	3	VI
Artificial Intelligence and Edge Computing	Technical Skills	3	VII
5G Technology for Smarter and Secure Connectivity	Technical Skills	3	VIII
Total Credits		30	

Mode of Delivery:

Self-paced learning + Expert session (VILT) – 30 hours, Project work – 15 hours

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(including project work)



Industrial IoT and Smart Systems

Integration with B.E. / B.Tech: EEE, ECE & E&I

Job Roles

- ▶ Embedded Engineer
- ▶ Field Test Engineer
- ▶ Network Planning Engineer
- ▶ Telecom Engineer
- ▶ Embedded System Developer
- ▶ R&D Engineer
- ▶ Drone Engineer

Skills

- ▶ **Embedded Board I/O Configuration:** Ability to configure sensors and actuators
- ▶ **Programming:** Ability to code in Embedded C, MicroPython and VHDL
- ▶ **API Interface:** Ability to integrate sensor, Microcontroller and Wireless networks
- ▶ **Problem Solving:** Ability to think in alignment with requirements and solve the problems
- ▶ **Design:** Ability to use design tools to design modules of Drones and 5G Networks

Software Tools

- ▶ Edsim51 ▶ Tinker CAD ▶ Arduino IDE ▶ Wokwi ▶ ThingSpeak ▶ Adafruit ▶ Thonny IDE
- ▶ WEKA ▶ Packet Tracer ▶ Jupyter NoteBook ▶ Tiny ML ▶ Arduino UNO ▶ ESP 8266 ▶ ESP 32
- ▶ Embedded C ▶ MicroPython ▶ VHDL ▶ XiLinx ▶ Nano 33 BLE Sense ▶ Raspberry Pi Pico

Potential Recruiters

