

**Industry Oriented Courses to be offered by L&T EduTech to Engineering students of
PSG Institute of Technology and Applied Research**

PSG Institute of Technology and Applied Research is partnering with L&T EduTech to offer the students with Industry oriented courses to augment their capabilities and skill sets. The applied engineering courses are open for enrolment to all students of PSGiTech. The courses will be offered as self-paced modules in the L&T EduTech platform with mentoring from practising experts of L&T, robust assessments and certification. The Toppers of the courses will be offered Immersive learning at live Project sites of L&T.

The following is the list of courses available for enrolment. The courses will be offered from July 2022.

1.Civil Engineering Courses

S. No	Course	Description
1	Concreting Techniques & Practices	The course provides practical knowledge on concrete technology which includes testing of materials, Indian Standard code procedures, handling of concrete at projects, do's and don'ts for concrete, etc. This course also provides knowledge on Self Compacting Concrete, Pavement Quality Concrete, Dry Lean Concrete and Mass Concrete. The learner will get practical tips on best practices in concrete construction from industry's experience. This course will help the learner acquire application-oriented knowledge in concrete technology
2	Foundation Engineering Practices	Covers a wide range of topics in foundation engineering including: - Best-in-class case studies from industrial construction projects to highlight the types of foundations, real-world soil profile reports - Software demonstrations (e.g., PLAXIS) for analysis and calculations - Practical aspects of soil investigation, bearing capacity, foundation selection criteria and constructability aspects in real-world scenarios
3	Design of Reinforced Concrete Buildings and Practices	Provides experience of designing reinforced concrete buildings as in a design office, with - End-to-end coverage of concrete buildings - conceptualization, load computation, design, detailing and completion - using videos and simulations based on a real-world construction projects - ETAP software demonstration for modelling and design - Practical aspects of system selection and industry best-practices
4	Practical Design of Structural Steel Members	Provides insights into the complete design of a fully integrated steel structure from an industry standpoint, including - Practical aspects in design of a small to medium rise steel building - Examples and problems based on industry standards and expertise from building state-of-the-art structures. - Graphical simulations for crucial topics such as torsional buckling, buckling phenomena and tension members
5	Structural Steel Buildings – Design And Practices	Comprehensive coverage of steel building design with, - End-to-end coverage of multi-storeyed steel buildings - from conceptualization to completion - using videos and simulations based on a real-world construction project - Modelling idealization using STAADPRO -Practical aspects of structural system selection, connection, fabrication

6	Design and Execution of Pile Foundations	<p>Provides learners with a detailed understanding of pile foundations through,</p> <ul style="list-style-type: none"> - Construction site videos and images to highlight real-world applications of piling and execution - Software demonstrations (e.g., PLAXIS) and step-by-step design techniques for deep foundations - Deep dives on advancements in pile types (spun, helical, micro and CFA), industry best practices on selection and execution
7	Formwork Engineering Practices	<p>Tailor-made course curated by SMEs covering</p> <ul style="list-style-type: none"> - Real-world examples, videos and images of formwork from construction projects and sites - Recent advancements in formwork (e.g., climbing formwork) and industry best practices - Formwork selection criteria and applications across structures
8	Airports and Seaports Engineering	<p>Provides learners an overview of Planning, Design and Construction of Airport, and Seaport. It will provide a roadmap for learners to understand the concepts involved in Civil, Structural, Architectural and MEP functions involved in the Planning and Design of transportation infrastructure projects.</p> <ul style="list-style-type: none"> -Concepts reinforced with demonstrations and case studies/projects that have been successfully carried out in major cities in India and Abroad. - This course also provides information on the rapid advancement of technology in this field and helps the learner to acquire application-oriented knowledge with the help of case studies based on industry projects.
9	Metro Rail Transportation Design & Construction	<p>This course on Metro Engineering is to provide the learner with an overview of major functions involved in the Metro system. It will provide a roadmap for learners to understand the concepts involved in Civil, Structural, Architectural & MEP functions for Planning and Design of Metros. These concepts are reinforced with demonstrations and real case studies/projects that have been successfully carried out in major cities in India and Abroad. It provides brief knowledge to the learner to steer through their career in the field of Metro Rail, which is currently the most sought-after mode of mass transportation in rapidly growing urban hubs. This course also provides insights on the future modes of transportation, to supplement the learner to stay adept amidst the rapid advancement of technology in this field.</p>
10	Sustainable Design of Buildings (Green buildings)	<ul style="list-style-type: none"> -Unique course covering all major Sustainable building design aspects with orientation towards industry and standard practices. -Overview of Sustainability, Climatology, Solar angles and Sun path diagram. -Energy consumptions, envelope optimization, energy simulation models, ECBC Code provisions, Comfort in buildings – Thermal/ Visual/ Acoustics/ Indoor air quality -Energy efficiency, Water efficiency and waste management. -Life cycle assessment and Green ratings and certifications – IGBC/GRIHA -Problems are taken from projects in each module to impart knowledge on field challenges to the students. Case studies are given as project work for assessing comprehension of the course.

S. No	Course	Description
11	Heavy Lifting Techniques & Machinery	Offers learners insight into - Recent advancements in innovative methods for handling critical and special structures while demonstrating usage of heavy machineries - Engineering principles and practical applications in lifting systems across industries are explained with case studies and real-world examples of best-in-class equipment, boilers, long-span pre-cast girders and steel from projects - Specialized topics such as construction techniques employing mass lifting, safety protocols in industry
12	Construction Equipment and Techniques	This course teaches about modern equipment used in construction projects like bridges, roads, runways, building, tunnels etc. Construction equipment is used to complete the task with less manpower, high quality and high safety in the fastest possible way. This course clearly explains the purpose of heavy construction equipment covering Earthmoving equipment, Concrete equipment, Hoisting equipment, Tunnelling equipment, Power Generators, Utility, Finishing and Other construction equipment. It also explains how to identify the right equipment for the right job. In this course, the subject matter experts share their experiences about latest technology, modern construction equipment, chain of equipment and maintenance technics being followed in construction industry. The course will enlighten the learner on typical construction equipment used globally and also covers life cycle management of the equipment.
13	Deep Excavation and Tunnels	Underground structures have become very crucial today due to various reasons such as growing urbanization, development of strategic structures like oil storage caverns, hydroelectric projects, improvement in rail road connectivity etc. The need of experts involved in the design as well as site management for these underground structures is rapidly increasing throughout the world. Therefore, this course on deep excavation and tunnels is structured in a way to impart a brief understanding on the various types of underground Tunnels, Caverns and Shafts, its components, construction methodology and certain basic design aspects in the field on geotechnical/rock engineering and tunnelling
14	Precast Members – Systems & Construction	The objective of this course is to enhance the knowledge of Students and field engineers about precast and prefabricated building construction. Precast and prefabricated building construction is gaining importance nowadays due to the quality, speed of construction and economic benefit. This type of construction is significantly different from conventional building construction. This course will cover all the important technical aspects and also gives explanations with practical examples for designing precast concrete structures
15	Solid Waste Engineering and System Design	This course is a unique blend of core concepts of engineering and management for enriching knowledge and skill development on Solid Waste Management. The course will provide a roadmap for learners to understand the fundamentals applied in solid waste collection, transportation, treatment, and disposal with brief introduction on policy and governance. These concepts weaved with demonstrations and real case studies/projects through digital platform will enrich the intricacy of learners to be employable. The practical use cases in biogas technology,

		composting and on special waste will ensure the learners skill development towards circular economy in waste management. The course is curated with a learner centric approach to provide exposure to design, with practical demonstrations, hands-on exercises, and Projects.
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2. Electrical & Electronics Engineering courses

S. No	Course	Description
16	Electrical Power Distribution- Engineering And Automation	Practical-oriented course covering <ul style="list-style-type: none"> - Latest technological trends like SCADA & automation developed using industrial expertise. - Drone videos of substations depicting practical execution of various processes such as cabling - Deep dives into different types of distribution schemes and survey techniques, processes for overhead lines and underground cabling - Safety and statutory requirements for real-world projects e.g., what should be done if a line is crossing a railway track etc.
17	Microprocessors & Applications– A Practical Approach	Instructional model is designed to ensure that the learner has opportunities to explore modular tasks using simulation platforms and to gain practical experience by executing an in-course project. Key highlights include <ul style="list-style-type: none"> - Examples of project expertise in connected systems e.g., demonstration of microcontrollers in industry through edge connectivity of building cranes, GIS analysis to demonstrate interrupts - ARM and AVR programming and simulations through AVR IDE, EDSIM51DI - Hardware simulations using Arduino boards and sensors - Deep dives into board design, assemblers and debuggers
18	Integrated Engineering of MV Substation	<ul style="list-style-type: none"> - Unique course with interdisciplinary approach to substations via emphasis on the civil, mechanical and safety aspects - Site videos and photos of state-of-the-art substation technology, protection systems and practical applications of numerical relays sourced from various substation projects
19	Industrial Power System Analysis	A comprehensive coverage of the entire power system which consists of various components such as generators, power transformers, bus bars, circuit breakers, transmission lines, loads etc. with <ul style="list-style-type: none"> - Industrial models from cement plant power distribution system for real-world application of fault analysis - Real test cases of AC, DC load flow in wind power generation - ETAP and PSCAD software demos for power consumption and stability analysis - Case studies on the Indian power supply scenario - Deep dives into synchronous machine modelling, dynamic analysis network outage, asynchronous operations, small signal stability
20	Practitioner's Approach to Power System Protection & switchgear	Provides an up-to-date presentation of the role of protective relays in protecting the power system equipment <ul style="list-style-type: none"> - Theoretical summary along with examples of real-life engineering applications to a variety of technical problems. - Best-in-class practices of substation protection demonstrated through field videos of substations and GIS, an industry trend in protection - Video demonstrations of relays and crucial hardware

		- Deep dives into latest, advanced topics: optical instruments, PUTT & POTT schemes
21	Advanced Electrical System design For Buildings	- This course touches the main areas from planning the layout, the outdoor and indoor aspects of electrical equipment, talks about sizing the equipment, design the detailed electrical points, lighting, cabling, installation, commissioning, testing and operation & maintenance.
22	Extra Low Voltage System Design for Buildings	Today, with all the technological advancement, the challenge is making electrical items work consuming the lowest power. Extra low voltage, as the name spells out, briefs electronic and digital equipment that is now becoming a part of our day-to-day infrastructure which works consuming the least power, say at voltages from 5V to 24V DC and 230V AC. Be it offices, malls, hospitals, commercial & residential buildings, all are becoming smart from security to access to indoor/outdoor building management. This course explains in details systems that are now integral part of the any infrastructure. Course goes in details about all that is needed for any Building Management System

3.Mechanical Engineering Courses

S. No	Course	Description
23	Power Plant Engineering- An Industrial Context	Industry-tailored curriculum that provides insight into - Coal and gas based thermal power plant, nuclear power plant, combined cycle power plants - Technological advancement in systems and equipment - Real-world examples from Power projects (e.g., the plants in Rajpura, Punjab and Khandwa, MP) to demonstrate best-in-class practices and visual depictions of processes - Deep dives into balance of plant (coal and ash handling, water cooling systems, air draft systems etc.), system engineering and design aspects
24	Power Plant Boiler & Auxiliary Systems	The course takes the learner through the Boiler plant layout and basic design. The course further takes the Learner through a deep dive into the design of major components of boiler, boiler structure, boiler major systems, boiler feed water system, boiler coal milling system, boiler duct, fans, air heaters, emission abatement system such as NOx and SOx, electrical systems of boiler, instrumentation and control and civil construction in boiler plant. The course also gives a glimpse of the manufacturing, quality assurance and control, construction, commissioning and operational aspects of boiler and auxiliaries for fossil fuel power plants
25	Power Plant Steam Turbine & Auxiliary Systems	The Steam Turbine is a machine that converts the thermal energy of pressurized steam and transforms it into mechanical work. The turbine generates a rotary motion which is used to drive the electrical generator that generates electrical power. This course is designed with topics related to different industry oriented technical & functional areas of Steam Turbine and its Auxiliary systems & equipment in a power plant. The various modules and topics provide the learner with detailed information and thorough industry-based knowledge on design, technical features, manufacturing, commissioning & operation of the specific technical areas of Steam Turbine & its Auxiliary systems.
26	Ventilation & Air conditioning	The course takes the learner through the typical process of designing HVAC systems particularly for Buildings with various applications. This

	System Design for Buildings	course will help learners to design HVAC systems for buildings with a practical approach and real time methods used in the industry. The course covers the fundamentals concepts of Air-conditioning and refrigeration systems along with the important calculations used to design efficient air-conditioning and ventilation systems. Learner will also gain knowledge on various life safety systems used in buildings during fire / emergency conditions. Real time examples of Heat load calculations, Duct static pressure drop calculations, Pump head calculations are taught to students in this course Subject matter experts who themselves have worked on designing iconic buildings in India and abroad. Learners are also taught about various types of HVAC equipment's and building side components. This information with real time site installation photographs will help learners understand the systems and components with better clarity
27	Industrial Piping Engineering	Process plant piping design requirements -Material selection and corrosion control -Pipeline routing -Design of piping systems with Flexibility analysis of pipes -Vibration analysis, Pipeline construction processes, testing, pre-commissioning & commissioning

4.Stream agnostic courses (Applicable for all disciplines)

S. No	Course	Description
28	Building Information Modelling in Architecture, Engineering and Construction	Industry-tailored curriculum covering - Application of BIM at project sites and custom-developed models based on real-world construction projects to efficiently plan, design, construct and manage buildings and infrastructure - Modelling and analysis using BIM software - Introduction to 5D & Asset Information Model (AIM)
29	Geospatial Practices For Engineers	Gives an insight into - Fundamentals of location technology - Various geospatial components that are used for solving real-world problems in engineering and construction industries through case studies based on projects across the country - Decision support system, stockpile quantity estimation, spatial analysis, subsurface investigation & bathymetry survey and GIS database concepts
30	Engineering Graphics And Design	- Real-world applications of engineering measurements and design from workshops - development, cutting, rolling and robotic welding of pipes - Exposure to finite element analysis and building information modelling - Modelling and drawing using AutoCAD
31	Applied Industrial IoT	Provides a comprehensive understanding of IoT, including - Case studies and real-world applications of IoT in different industries (e.g., bottling plants, corrugated boxes etc.) - Methods to design IoT solutions for industry problems - Aggregation, processing and visualization of IoT data for better business decisions - Security protocols for industrial IoT solutions
32	Cloud Adoption And Management Techniques	Offers an understanding of a key emerging technology today, including - Cloud strategy, assessment, solution, deployment, migration, management, and optimization - Industry best-practices and latest cloud technologies

S. No	Course	Description
33	Project Management For Professionals	Industry-focused curriculum covering, - Applications of project management principles in real-world projects through examples (substation, railway bridge, transmission line projects etc.) - Project planning, tracking and maintenance through MS Project
34	Integrated Approach To Building Services	Construction of residential/commercial/public buildings etc. requires multidisciplinary action where proper sequencing and coordination of the following disciplines are required: - <ul style="list-style-type: none"> • HVAC • Electrical Systems & ELV System • Fire Protection & Fire Alarm System • Public Health Engineering <p>The learner of this course will be exposed to all fields required for completion of a Building project, which will facilitate planning, coordination and execution of such projects.</p>
35	Fire & Life Safety In Infrastructure	The course takes the learner through the design, Installation and Maintenance of Active and Passive Fire Protection Systems which are typically installed in Infrastructures. This advanced course provides the learner the experience of designing fire protection systems in line with design standards and statutory requirements. The course is developed in manner to provide information via real time case studies and design examples which will support the learner's understanding about the design of active fire protection systems. The course also includes description about the various passive fire protection systems that can be implemented into fire safety design to ensure a fire safe infrastructure or premise.
36	Finance For Professionals	-Applications of valuation concepts to real-world cases & examples -Practical knowledge of risk and tax management
37	Campus 2 Corporate	This course is designed to improve placement readiness and every aspect of English language learning across listening, speaking, reading & writing. The course is inclusive of a baseline assessment, self-paced and adaptive lessons. The course has been accredited by AICTE NEAT and listed on the NEAT portal. The course is inclusive of a baseline assessment, self-paced and adaptive lessons and a certification exam upon completion of the course. Institutions also have the opportunity to opt for a two-day training that can be delivered in-person at the institution's campus.
38	Safety For Professionals	This course primarily focuses on providing a basic understanding about safety and health at workplace. This course covers several aspects of occupational safety and health, with orientation on statutory frameworks, coupled with the wealth of experience shared by subject matter experts. Classification of Hazards and their impact on employee's safety and health; and applicable risk control measures being followed at workplaces are also covered. This course also offers information on significance of Process safety management, safe systems of works such as Permit to Work, Lock Out and Tag Out (LOTO), Safety inspections, emergency preparedness etc. The course details about widely accepted

		concepts and techniques of Hazard analysis and Risk calculation, incident investigation techniques provided with practical scenarios and examples.
39	A Professional's Approach to Law and Ethics	This course is structured keeping in mind the need to familiarise the learners with various laws they would be required to apply in their professional life on a day-to-day basis. The contents of the course are divided into lessons that deal with various areas of law; such as: <ul style="list-style-type: none"> - study of professional ethics that offers an overview of the fundamental principles of ethics, and various ethical and legal issues such as confidentiality, anti-corruption, discrimination; - insights into law of contract to enable future professionals to understand the basics as well as most important components of contracts with specific focus on corporate contracts; - Study on dispute resolution to enable the learners to understand the mechanism of dispute resolution process in India; - Study on labour laws to sensitise learners to the issues relating to occupational safety, environmental concerns, sexual harassment at workplace, - Study on Intellectual Property Rights and Taxation; - Insights into basic laws governing companies.
40	Public Policy for Young Professionals	Public Policy looks at how economics, sociology, political science interacts to impact our lives. Leadership roles will require people who can design solutions taking socio-economic impacts into consideration. This course will equip Young Professionals to learn how to influence policy, to ask the difficult questions, and to make decisions backed by data. The course is built largely in case-based format, and each module uses real-life examples to drive home the learning points. It is carefully designed for a balance between breadth and depth appropriate at the introductory level.

5.IT Courses

S. No	Course	Description
41	IT Foundation – Unleash power of Operating System & Network	-This course is made with the objective of familiarising the students with the basic skills required for the IT Industry and also to serve as pre-requisite for any of the IT advanced courses. -Students will gain deep understanding of Operating Systems (OS), Types of OS, Booting process, networking & network services like DHCP, DNS.
42	IT Foundation - 7 Essential Components of IT Infrastructure	-This course follows the Objective of the previous IT Foundation course to familiarise the students with the basic skills required for the IT Industry and also to serve as pre-requisite for any of the IT advanced courses. -Advanced and upcoming concepts like Architecture, Data Base management System, Cloud, Security, Automation and Storage, will require this course to serve as a platform for transitioning and deeper expertise.

Students can get the pricing of courses from HoDs. They are encouraged to visit <https://engineering.Intedutech.com/> for more details.

Students shall enrol in the course(s) of their choice by filling the Microsoft Forms using the link: <https://forms.office.com/r/Pn56WdXcF4>

Principal