CENTER FOR INVENTION, INNOVATION, INCUBATION & TRAINING (CIIIT)

ESTABLISHED BY SKILL DEVELOPMENT DEPARTMENT J&K & TATA TECHNOLOGIES LTD.

GOVERNMENT POLYTECHNIC JAMMU, J&K

GOVERNMENT POLYTECHNIC BARAMULLA, J&K

DEPARTMENT OF SKILL DEVELOPMENT JAMMU & KASHMIR

Center for Invention, Innovation, Incubation and Training (CIIIT)

CIIIT's has been established in a joint initiative by Skill Development Dept, Government of Jammu & Kashmir & TATA Technologies Led industry consortium at Jammu & Baramulla

Objectives

- To achieve excellance in technical education having focus on innovative design, entrepreneurship development, enhancing employability rate.
- facilitate Innovations & skill development for students, industry professionals and unemployed youth who want to upgrade their skills to latest technologies in an Industry environment.
- Promote Invention, Innovation and Incubation under the mentorship of industry experts.
- Enable Industry- Academia partnerships.
- Leverage advanced competency centers and expertise of Industry subject matter experts (SMEs) for training the students, industry professionals and unemployed youth with industry relevant skills and competencies in industry environment.
- Enable competency development in modern engineering tools necessary for product design, development and manufacturing and provide students to gain insights of Industry 4.0 and other disruptive technologies.

9 Competency Development Centres:


Innovation Design and Incubation Centre


Product Verification Analysis Centre


Product Lifecycle Management Centre


Value Engineering and Benchmarking Centre


Autonomous Connected Electrified (ACE) Centre


Mechatronics and IOT Centre


Digital Manufacturing Centre


Manufacturing Execution System Centre


Advanced Manufacturing Centre

Uniqueness & Excellence

- ✓ This initiative is a constructive example of Public-Private partnership where the government (Skill development department of J&K) and private sector (Industry consortium led by Tata Technologies Ltd.) have joined hands together to enhance the skilling landscape of J&K.
- ✓ Multi-pronged approach adopted for developing an entrepreneurial ecosystem through 'Skill Training', 'Employment Enhancement', Research & Development', 'Innovation' and 'Incubation'.
- ✓ It will Inculcate the culture of invention, innovation & skill development giving a boost to industry-academia collaboration and aiding the local ecosystem.
- ✓ Platform for innovation and R&D, not just for students but also for new innovators & startup companies, local industries and SMEs to extend their R&D activities, whereby reducing their cost and space requirements for undertaking R&D activities and to overcome their business challenges.
- ✓ Equipped with cutting edge technology tools, equipment, modern machines and contemporary softwares essential for Industry 4.0.
- ✓ Bridge the Skill-gap.

CENTER DETAILS

Innovation Design and Incubation Center

This Center facilitates experiential learning pertaining to product design and engineering. Innovation Design and Incubation Center provides industry environment with the latest technology tools (such as PTC CREO etc) used by major industries for product design & engineering.

This center consists of high-end industrial workstations, which are loaded with advanced tools used for Product Design and Engineering.

Key Enablers:

- High End Industrial Workstations, CREO Software
- Design Thinking & Innovation Process
- Product Design and Development, Regulations
- Industrial Best Practices

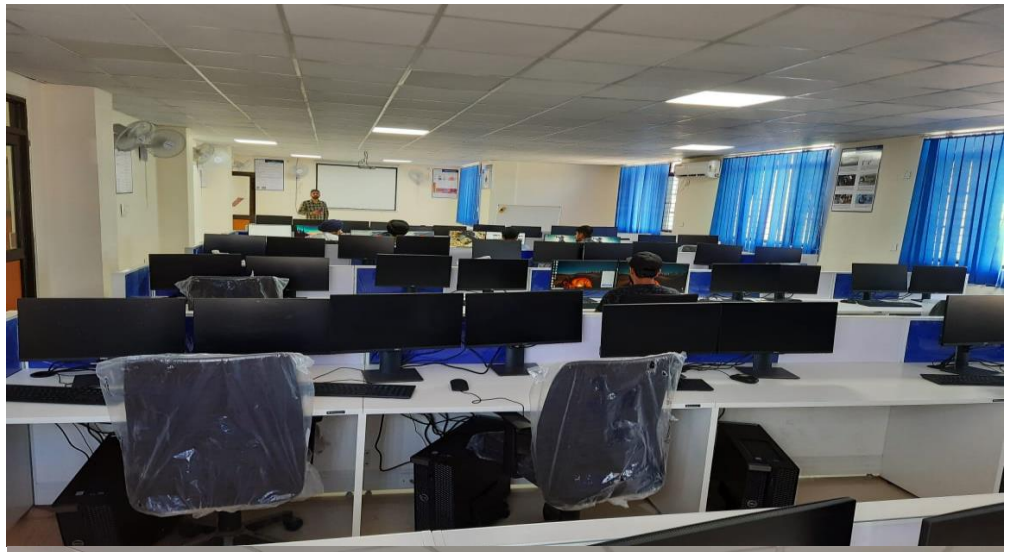
Job Roles:

- Design Engineer, Product Engineer, CAD Engineer, CAD Executive, CAD Operator.

Career Opportunities:

- Automotive Industries, Aerospace Engineering, Construction Equipment
- Locomotive
- Industrial Heavy Machinery
- Consumer Goods, Oil and Gas
- Manufacturing Industries, Steel Industries
- Electricals and Electronics etc.

Innovation, Design and Incubation Labs



Center Details

Product Verification Analysis Center

Product Verification Analysis Center provides an industry environment with the latest technology tools used by major industries for product validation and optimization of design. This center consists of simulation software technology that enables engineers to validate and optimize their designs using virtual prototypes. These technologies help companies to improve quality, save time, and reduce costs associated with design and test of manufactured products. These Software (Ansys, FEAST etc) are used by leading manufacturers for linear and nonlinear finite element analysis (FEA), fluid dynamics (CFD), advanced material modelling, acoustics, fluid structure interaction, multi-physics, optimization, fatigue and durability, multi- body dynamics, controls, and manufacturing process simulation.

Key Enablers:

- High End Industrial Workstations
- ANSYS Mechanical CFD Maxwell, ANSYS HFSS, ANSYS Q3D Extractor, ANSYS Siwave, ANSYS SCADE Suite Advanced Modeler Seat, ANSYS SCADE Suite KCG Code Generator - C and ADA, ANSYS SCADE Test Model Coverage, ANSYS HPC Workgroup 256, Ansys Learning Hub.
- FEAST, CREO

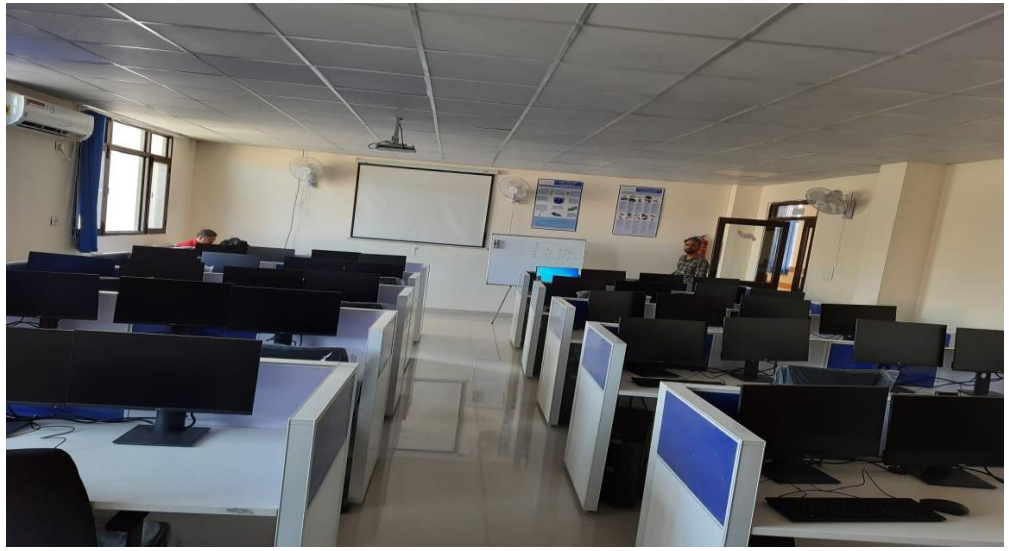
Job Roles:

- CAE Engineer, Stress Engineer, CAE Assistant Engineer, CAE Support Executive.

Career Opportunities:

- Automotive Industry, Aerospace Industry, Consumer Goods, Construction & Agricultural Equipment's, Industrial Heavy Machinery, Manufacturi ng Industries, Steel Industries, Electricals and Electronics

PRODUCT VERIFICATION ANALYSIS LABS



Center Details

Product Lifecycle Management Center

This Center facilitates experiential learning pertaining to Product Lifecycle Management (PLM). Product lifecycle Management (PLM) is the process of managing the entire lifecycle of a product from inception, through engineering design and manufacture. Product life cycle management is the integration of all aspects of a product, taking it from conception through the product life cycle (PLC) to the disposal of the product and components. PTC Windchill is a Product Lifecycle Management (PLM) software whose user base ranges from individuals to large corporations' area like Aerospace & Defense, Automotive, Electronics & High-Tech, Industrial Products, Medical Devices, Retail, Footwear & Apparel.

Key Enablers:

- High End Industrial Workstations-CREO, Windchill
- Design Thinking & Innovation Process, Product Design and Development

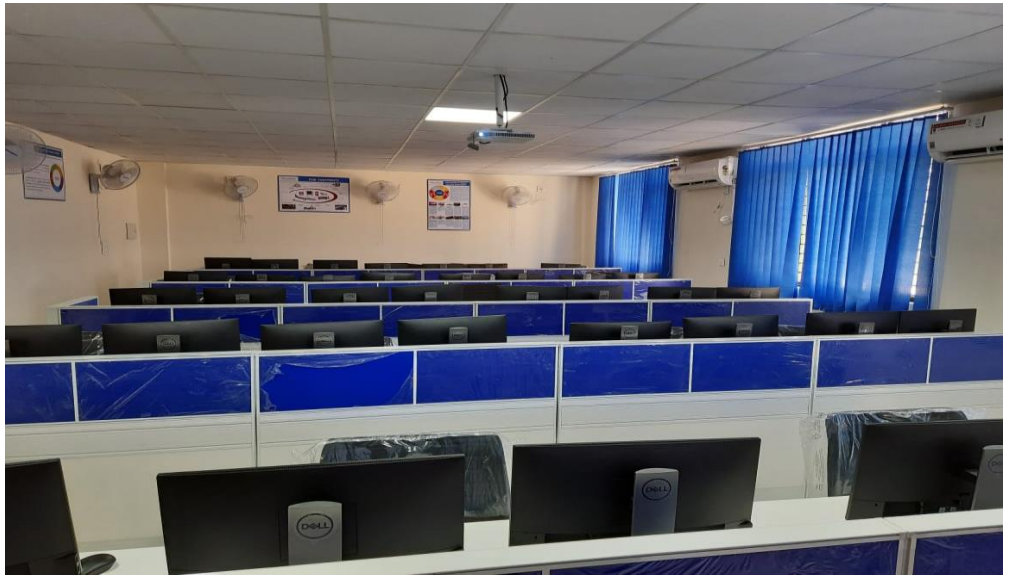
Job Roles:

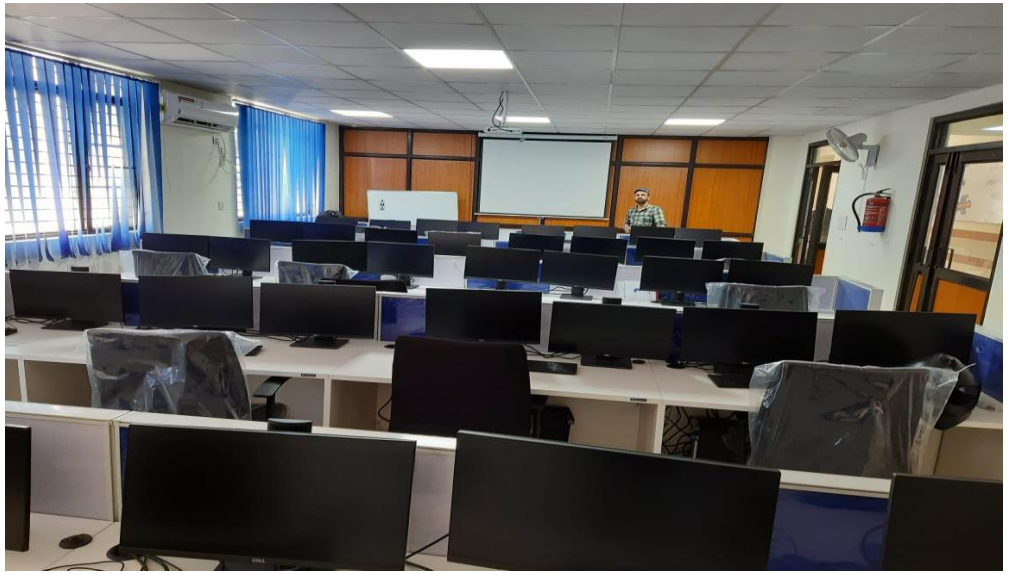
- PLM Engineer, PLM Solution Architect, PLM Developer, Assistant PLM Engineer, PLM Operator.

Career Opportunities:

- Automotive Industries, Aerospace Engineering, Construction Equipment's, Locomotive Industrial Heavy Machinery, Consumer Goods, Oil and Gas, Manufacturing Industries, Steel Industries, Electricals and Electronics etc.

Product Lifecycle Management Labs





Center Details

Value Engineering and Benchmarking Center

This Center facilitates experiential learning pertaining to various systems and sub-systems. This competency center consist of different machinery that will enable teardown and benchmarking. The Value Engineering and Benchmarking Center consists of Powertrain, Chassis System, Body Engineering, Electrical & Electronic System and Integrated Vehicle Assemblies. While executing any task, better understandings of physical system and its complexity will help deliver the required results effectively. This enables students to make a solid foundation in engineering application by working on real life assemblies and components. Benchmarking centre is facility for conducting benchmark studies, study cost effective designs, instill the principles of Value Engineering. This also helps to understand the philosophy of exploring ideas for innovative products keeping product value in sight. The lab consist of different machinery that will enable teardown and benchmarking.

Key Enablers:

- High End Industrial Workstations and CREO
- Advanced Vehicle Systems and Sub Systems
- Car Lift, Teardown tools
- Value Engineering Tools and Techniques
- Design Thinking & Innovation Process | Product Design and Development

Job Roles:

- Design Engineer, Automobile Engineer, VAVE Engineer, Assist. Automobile Engineer, Auto Mechanic, VAVE Assistant.

Career Opportunities:

- Automotive Industry, Construction Equipment's, Agricultural Equipment's, Industrial Heavy Machinery, Manufacturing Industries, Electricals and Electronics etc.

Value Engineering and Benchmarking Labs

Center Details

Autonomous Connected Electrified (ACE) Center

This center is a specialized center which enable students to develop skills in electric vehicle Autonomous connected cars technology. Electric vehicles hold significant potential for not only transforming how the world moves, but also for increasing energy security and reducing carbon emissions and other pollutants. Transportation accounts for about one-fifth of global energy use, and passenger vehicles account for about ten percent of energy- related carbon dioxide emissions. With the rapid rise in personal vehicle ownership around the globe, demand for fuel will continue to increase along with carbon emissions unless there is a shift in transportation. There are a variety of clean vehicle technologies and fuels in development and in use, but electric vehicles represent one of the most promising technologies for reducing oil use and cutting emissions. This market is still developing, however, there are many challenges, particularly with technology integration, optimization, and scale-up.

Key Enablers:

- High End Industrial Work Stations, CREO
- Full EV Chassis with all working systems and EV Components and Tools
- EV DC Fast Charger, Industrial Grade Sensors, IOT Board
- Internet of Things (IOT)
- Product Design and Development & Industrial Best Practices

Job Roles:

- Design Engineer, EV Engineer, Assist. EV Engineer, Autonomous Car Engineer, EV Repair Mechanic.

Career Opportunities:

- Automotive Industry, Construction & Agricultural Equipment's, Industrial Heavy Machinery, Manufacturing Industries, Electricals and Electronics etc.

Autonomous Connected Electrified (ACE) Labs

Center Details

Mechatronics and IoT Center

This center also acts as hub for various research activities related to Internet of Things and next generation technologies and also as an incubation center for advance technologies in the Automotive electronics field and will provide the basic Automotive E&E architecture platform on which students will be able to experiment, research and innovate on the upcoming trends.

Mechatronics is an integration of interdisciplinary technologies mainly mechanical, electronics and electrical. Today every industry is facing a challenge to integrate and automate many features for any system, with mechatronics it is now easy to have simplified designs, rapid machine setups, cost effectiveness, quick development trials, optimized performance, productivity and reliability. The rise of IoT will soon bring the factory of the future to reality. such as Thingworx platform which is the fastest way to unlock the value of the physical-digital convergence of the IoT.

Key Enablers:

- High End Industrial Workstations
- Thingworx Industrial Connectivity
- Internet of Things Hardware and Data Analytics Tools
- Sensors and other accessories
- Electric and Electronic components and Industrial Best Practices

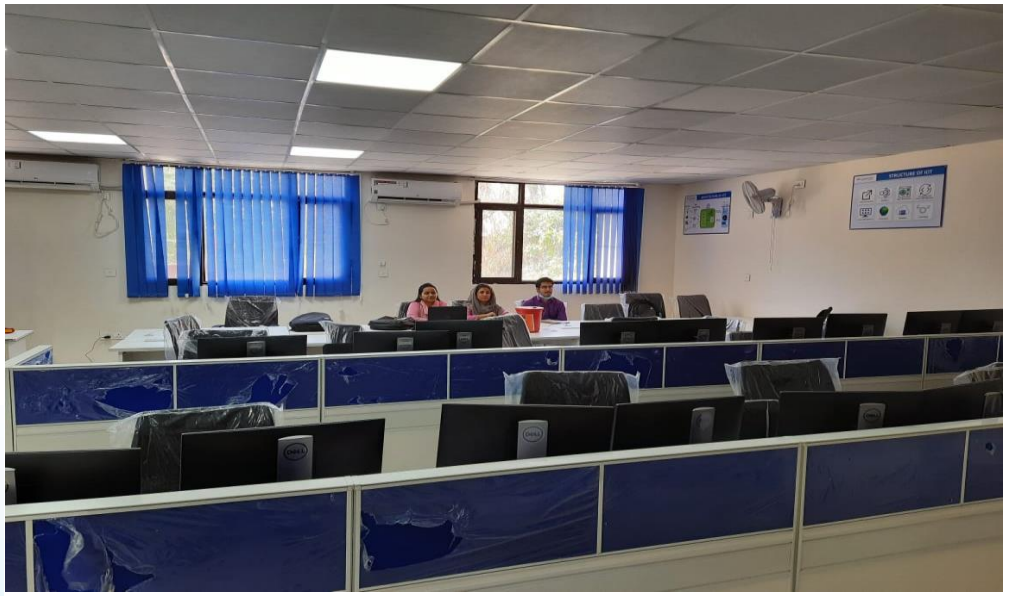
Job Roles:

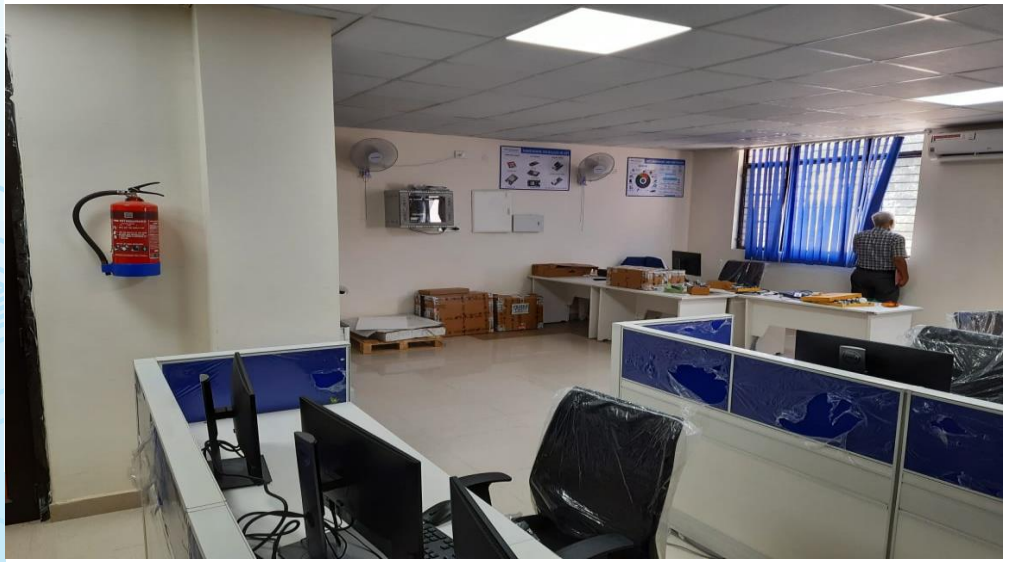
- Mechatronics Engineer, IOT Engineer, IOT Developer, Mechatronics Technician, IOT Technician, IOT Smart Agriculture Technician.

Career Opportunities:

- Automotive Industries, Aerospace Engineering, Construction Equipment's , Locomotive, Industrial Heavy Machinery, Oil and Gas, Consumer Goods, Manufacturing Industries, IT Industry, Electricals and Electronics etc.

Mechatronics and IoT Labs





Center Details

Digital Manufacturing Center

This Center facilitates in experiential learning pertaining to various manufacturing processes which are used in manufacturing industries. This center consists of Industrial Robotics, Welding Fixtures, Conveyor, Gripper etc. This Center will help students to perform Robotic Programming for various manufacturing operations such as arc welding, material handling etc. It also helps students to understand and select suitable method of manufacturing based on function, materials, applications, cost constraints, cycle time etc.

Today extensive automation is practiced in practically every type of manufacturing and assembly process. Some of the larger processes include electrical power generation, oil refining, plastics, cement plants, fertilizer plants, automobile and truck assembly, aircraft production, glass manufacturing, food and beverage processing, canning bottling and manufacture of various kinds of parts. Robots are especially useful in hazardous application like automobile spray painting, Welding etc. Robots are also used to assemble electronic circuit boards in Automotive industry.

Key Enablers:

- Industrial Workstation
- Industrial Robotics
- Arc Welding, Welding Fixture, Gripper
- Assembly Line, Palletizing
- Industrial Applications and Industrial Best Practices

Job Roles:

- Industrial Robot Engineer, Robot Specialist, Robotic Operator, Digital Manufacturing Assistant Engineer, Simulation Engineer.

Career Opportunities:

- Automotive Industries, Aerospace Engineering, Locomotive, Consumer Goods, Manufacturing, Industries, Electricals and Electronics etc.

DIGITAL MANUFACTURING LAB

Center Details

Manufacturing Execution System (MES) Center

This center is a specialized center which enable students to develop skills in Manufacturing Execution System. The automotive industry is a discrete manufacturing industry that has many characteristics in common with process manufacturing. These include high levels of automation (robotics, programmable logic controllers (PLCs), vision systems and automated assembly lines).

The focus of an automotive assembly MES-and of the entire operation-is keeping the assembly line moving. The MES focus is on tools to help production management identify, diagnose, predict and solve any issues that could cause disruption.

Manufacturing Execution center consist of high-end industrial workstations, Conveyor with PLC tools like Factory Magix. This will give competitive edge in placement drives and will have better employability for students in the job roles available in the market viz, Quality Engineer, Production Engineer, Process ValidationEngineer.

Key Enablers:

- High End Industrial Workstations
- Conveyor with PLC
- Pick to Light Sensor Integration
- Tata Technologies MES Technology Tool
- Assembly Line and Industrial Best Practices

Job Roles:

- MES Engineer, MES Developer, MES Specialist, MES Technician.

Career Opportunities:

- Automotive Industries, Aerospace Engineering, Locomotive, Consumer Goods Manufacturing, Industries, Electricals and Electronics etc.

Manufacturing Execution System (MES) Labs

Center Details

Advanced Manufacturing Center

This Advanced Manufacturing Center is an industry environment for experiential learning of various advance manufacturing processes used in different industries. It is equipped with the latest industrial equipment for CNC programming, Additive Manufacturing, Reverse Engineering, Laser cutting etc.

Advance manufacturing is the production of complex machines through the application of advancements in science in manufacturing processes and product design. It is the utilization of enabling technologies, incorporating design and business process innovation to deliver high value-added processes and products in ways that are novel and competitive. Advanced manufacturing covers a whole host of new industrial processes that improve upon traditional methods in quality, speed, and cost.

Key Enablers:

- High End Industrial Workstations
- Vertical Machining Center, CNC Turning Machine, Industrial 3D Printer Plastics
- Hydraulic Press and Tool Set, CO2 Laser engraving & cutting machine
- Mastercam Software, PROCAM
- Industrial 3D Printer Plastics and Industrial Best Practices
- **Job Roles:**
- Manufacturing Engineer, VMC Engineer, Additive Manufacturing Engineer, VMC Machine Operator, Additive Manufacturing Operator.

Career Opportunities:

- Automotive Industries, Aerospace Engineering, Construction Equipment's, Locomotive. Industrial Heavy Machinery, Consumer Goods, Manufacturing Industries, Steel Industries, Electricals and Electronics etc.

Advanced Manufacturing Labs

Courses offered

S.No.	Competency Center	Certificate Course Name	Batch Size	Duration	Eligibility
1	Innovation Design & Incubation	Design Engineering	30	3 Months	M.Tech / B.Tech
		CAD Engineering	30	3 Months	Diploma
		CAD Operator	30	3 Months	ITI
2	Product Verification & Analysis	Finite ElementAnalysis	20	3 Months	M.Tech / B.Tech
		Finite Element Analysis – FEAST	20	3 Months	M.Tech / B.Tech
3	Product Lifecycle Mgt	PLM Application Engineering	10	3 Months	M.Tech / B.Tech
4	Value Engineering & Benchmarking	Automobile & Value Engineering	20	3 Months	M.Tech / B.Tech
		Auto Maintenance and Repair	20	3 Months	Diploma / ITI
5	Autonomous Connected Electrified	Electric Vehicle & Connected Autonomous Vehicle	20	3 Months	M.Tech / B.Tech
		Electric Vehicle Repair	20	3 Months	Diploma / ITI
6	Mechatronics & IoT	Mechatronics and IOT Engineering	20	3 Months	M.Tech / B.Tech
		Home Appliance Technician	20	3 Months	Diploma / ITI
7	Digital Manufacturing	Digital Man. & Industrial Robotics	20	3 Months	M.Tech / B.Tech
		Robot Operator	20	3 Months	Diploma / ITI
8	Manufacturing Execution System	MES Engineering	20	3 Months	M.Tech / B.Tech
		Manufacturing Exe. System Optr	20	3 Months	Diploma / ITI
9	Advance Manufacturing Engineering	Advanced Manufacturing	20	3 Months	M.Tech / B.Tech
		Machine Tool Optr / CNC Operator	20	3 Months	Diploma / ITI

THANKS

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