



# Jyothi Engineering College

NAAC Accredited College with NEI Accredited Programmes\*

Approved by AICTE & affiliated to APJ Abdul Kalam Technological University

A CENTRE OF EXCELLENCE IN SCIENCE & TECHNOLOGY BY THE CATHOLIC ARCHDIOCESE OF TRICHUR

JYOTHI HILLS, VETTIKATTIRI P.O., CHERUTHURUTHY, THRISSUR, PIN-679531 PH: +91-4884 259000, 274423 FAX: 04884-274777



NBA accredited B.Tech Programmes in Computer Science & Engineering, Electronics & Communication Engineering, Electrical & Electronics Engineering and Mechanical Engineering valid for the academic years 2016-2022. NBA accredited B.Tech Programme in Civil Engineering valid for the academic years 2019-2022.

## 7.3 Institutional Distinctiveness

### Index

SINo	Relevant Documents
1.	MOU
2.	Brochure
3.	Picture of Lab Classes at IIIC

**MEMORANDUM OF UNDERSTANDING**

This MEMORANDUM OF UNDERSTANDING ("MOU") is entered into this Tuesday 1<sup>st</sup> September 2020 ("Effective Date")

**BETWEEN**

**Jyothi Engineering College, Jyothi Hills, Vettikkattiri, Cheruthuruthi, Kerala herein after referred to as ("JECC Kerala")**

**...PARTY OF THE FIRST PART**

**AND**

**TATA TECHNOLOGIES LIMITED**, a company incorporated under the Laws of India, (hereinafter referred to as "**Tata Technologies**") which expression shall, unless the context otherwise requires, includes its successors in business and permitted assigns),

**...PARTY OF THE SECOND PART**

	<b>PARTY OF THE FIRST PART</b>	<b>PARTY OF THE SECOND PART</b>
Party	Jyothi Engineering College	Tata Technologies Limited
Located in	Jyothi Hills, Vettikkattiri, Cheruthuruthi, Kerala	25, Rajiv Gandhi InfoTech Park, Phase 1, Hinjewadi, Pune – 411057
Website	<a href="http://www.jecc.ac.in">www.jecc.ac.in</a>	<a href="http://www.tatatechnologies.com">www.tatatechnologies.com</a>
Represented by	Rev. Msgr. Thomas Kakkassery, Manager, Jyothi Engineering College	Anand Bhade President- APAC

True Copy Attested

*anand*

*Thomas Kakkassery*

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For the purposes of this transaction between the JECC Kerala and Tata Technologies Limited, this MOU is synonymously referred to as "Agreement" and the "Work Order" to TATA Technologies to follow within 3 working days of MOU Signing.

For the purposes of this MOU between the JECC Kerala and Tata Technologies Limited, the "Integrated Industrial Incubation Center" an Industrial Experiential Learning & Development center is also referred to as the "IIIC".

#### Executive Summary of this MOU

Tata Technologies IIIC is a one-stop center providing Integrated industrial training on technical and skill development in collaboration with the JECC Kerala, to communities close to where they live as part of a comprehensive strategy to better their lives.

The plan outlines the way forward for continued sustainability and improvement of center, as well as the extension of this skill development network for Kerala.

This agreement between Tata Technologies and the JECC Kerala will enable efficient, effective, integrated and sustainable service delivery in the implementation of the IIIC

#### WHEREAS

- a. The JECC Kerala is desirous of partnering with Tata Technologies to setup IIIC.
- b. Tata Technologies is the enablement partner to the JECC Kerala which is the infrastructure and investment partner for IIIC to be jointly established in JECC Kerala (hereinafter referred to as "Project")

#### Objectives of the MOU:

- a. Qualitative improvements in technical education
- b. To create IIIC infrastructure and learning environment for training resources, to cater to the increasing industry needs globally.
- c. To provide ready local pool of engineers, operators, technicians and skilled resources required by the industries in the field of manufacturing sector.
- d. To increase the employability of the population of Kerala.
- e. Provide high end industrial training to increase chances of good quality jobs.
- f. Support to upgrade course curriculum to modern industrial practices as necessary
- g. Enhance the reputation of technical institutions as modern and state of art technologies
- h. Help innovators to develop new products
- i. Promote technology start-ups

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The above objectives will be met through:

- a. Establishing an IIIC, with latest manufacturing technology tools and equipment which is widely used in the industries
- b. The learning methodology will include classroom and lab sessions, online videos, e-learning, assessments and joint certifications at the IIIC.

**NOW, THE PARTIES TO THIS MOU HEREBY AGREES AS FOLLOWS:**

**1. TERM:**

The MOU shall commence on the Effective Date after the MOU is signed by both the parties. The MOU will be valid for 36 months from the date of signing the MOU.

**2. ROLE OF TATA TECHNOLOGIES**

- a. Establish the Industry Academia interface in JECC Kerala in the form of the IIIC.
- b. Provide and arrange hardware, Technology Tools, Equipment & Machinery with required configuration needed for running the technology solutions in the IIIC as agreed in the proposal (BoM as per annexure attached with this document)
- c. Handover for daily operations after Installation and Setup completion and provide assistance for maintenance and up-gradation of technology solution.

**3. ROLE OF THE JECC**

It is agreed between the Parties that JECC Kerala shall provide the following support services to Tata Technologies for the successful implementation of the said Project:

- a. Provides the fully built-up ready to use space and other infrastructure facilities for setting up of IIIC.
- b. Provides all required support for successful implementation of the IIIC
- c. JECC will do the following
  - i. Provide required Electricity with Power Back Up (UPS and Generator Set up) to run the IIIC.
  - ii. Electrical and Network wiring for all the Equipment, machinery with internet connectivity for IIIC as needed. Range of fixed IP address list as per requirement.
  - iii. Ground or Basement with Trimix flooring with RCC / PCC plinth, minimum 8" thick to sustain load up to 8 tons / sq. m.

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*[Signature]*

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- iv. General Utilities like Drinking Water, Washrooms, fire safety system as per university/Institute norms.

4. INTENDED OUTCOMES OF THE IIIC

- a. Improved skills of students leading to employment & entrepreneurship
- b. Technical curriculum more updated and aligned to current and near future industry requirements
- c. Workshop for all nearby Colleges/students at the IIIC and for nearby MSMEs
- d. IIIC to focus on training students in line with latest industry needs and make them employable

5. UNDERSTANDINGS REACHED AND AGREED BETWEEN THE TATA TECHNOLOGIES AND JECC KERALA

The TATA Technologies and JECC have agreed as under:

- a. The premises/center infrastructure mentioned under this MOU shall be provided to Tata Technologies by the JECC Kerala, devoid of encumbrances for an initial period of 36 months from the date of signing this MOU. This MOU shall be renewed for such further time as may be required for implementation of the IIIC.
- b. As the above mentioned premises/center infrastructure needs to be furnished and provided by the JECC, an understanding has been reached between the JECC and Tata Technologies that for the purposes of fulfillment of the IIIC, JECC shall bear the expenses to get the premises readily available, renovated and furnished based on the assurances that (i) the JECC shall ensure that the occupation and use of the premises by the IIIC shall be assured for a minimum period of 36 months (ii) any permissions/approvals required in this regard from any government/municipal authority shall be obtained by the JECC.
- c. Tata Technologies will provide the technology set-up and promote technical education in the field of Engineering and Design and various enterprise solutions.
- d. Tata Technologies will also extend reasonable placement assistance and necessary guidance to appropriate students, registered with the IIIC.
- e. Tata Technologies will proceed and commence with the above-mentioned engagements after the fully built up ready to use space/premises with required infrastructure is made available to TATA Technologies by the JECC

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*Sunny*  
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- f. Project Time Line: The setup of IIC should be completed within the 4 to 6 months from the date of handing over the ready to use infrastructure by JECC.

## 6. CONSIDERATIONS

- a. The Parties have ascertained that the total cost of setting up IIC at JECC is Rs.25,50,00,000/- (Rupees Twenty-Five Crore and fifty lacs Only) which is exclusive of taxes.
- b. It is agreed that JECC will pay an amount of Rs. 2,55,00,000/- plus taxes (Rupees Two Crore Fifty-five lakhs only) to Tata Technologies as a consideration for the implementation of IIC.
- c. Payment Terms: - 100% advance at the time of MOU Signing.

## 7. CONFIDENTIALITY:

- 7.1 Each party shall hold all the information strictly confidential, whether comes to the knowledge of such party through a written document or in oral form. "Confidential information" shall mean any/all information that would ordinarily and without breach of any legal obligation, not be known to any person who is not having any relationship with the party concerned or any proprietary information of Parties , whether of a technical nature or any other sensitive information, thus all inventions, disclosures, processes, ideas, systems, methods, formulae, devices, intellectual properties, instruments, know how, improvements, materials, products, patterns, compilations, data, programs, techniques, sequences, designs, research or development activities and plans, licenses, specifications, computer programs, source and object codes, mask works, works of authorship, costs of production, prices or other financial data, volume of sales, promotional methods, lists of names or classes of clients/ customers or personnel, lists of suppliers, business plans, budgets, business opportunities, financial statements or information related to party concerned shall be referred to as Confidential Information with reference to this MoU.
- 7.2 Each Party further agree to maintain and use the confidential information of the other party only for such purpose as may be required and permitted for the due execution and performance of this MoU and to make copies as may be specifically authorized by the prior consent of other party and disclosure of confidential information to third parties and to use such information only on a "need to know" basis.
- 7.3 All the confidential information shall, at all times, remain the exclusive property of the party concerned.

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*[Signature]*

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## 8 INTELLECTUAL PROPERTY RIGHTS:

- 8.1 The Parties acknowledge that all Intellectual Property Rights to any material or information including but not limited to the course materials, curriculum, the software systems, procedures, operating, quality, control, audit and user manuals, database design, source and object code, reports etc. designed by either Party shall at all times be the sole and exclusive property of the respective Party.
- 8.2 The Parties acknowledge that all Intellectual Property Rights which arise in relation to the course content, curriculum, case studies, pedagogy and other academic know how developed by either Party during the subsistence of this Agreement and in relation to the Services shall at all times be the sole and exclusive property of the respective Party.
- 8.3 Parties agreed that they will sign End User License Agreement (EULA) separately whereby Tata Technologies shall permit to access and use online/offline contents in accordance with mutually agreed terms of MoU.
- 8.4 All the existing property rights owned by either party and not developed under the scope of this MoU but introduced during the performance of this MoU shall remain the party's property.
- 8.5 Any new IP developed jointly by the parties themselves or through the innovators/ trainee who obtained support of IIC shall be jointly owned by the parties. However, for each/all such invention/s, the Parties and/or IIC will execute required agreement at that point of time.

## 9 INDEMNITIES AND WARRANTIES:

- 9.1 Parties shall indemnify and hold each other harmless against any loss, claim, or damage to any person or property caused by its willful misconduct or gross negligence. Parties shall hold each other indemnified against any loss, damage, cost and expenses including attorney's fees, which may be incurred as a result of any action or claim initiated against indemnified party due to any material brought into project or any deliverables, any third party alleging infringement of their intellectual property rights due to usages of provided software, tools, hardware or usages of the property.
- 9.2 Parties shall have no obligations with respect to any Infringement Claims to the extent that the Infringement Claim arises or results from: compliance with specific technical specifications and instructions provided by the other party; (i) inclusion in a Deliverable of any content or other materials provided by other party and the infringement relates to or arises from such materials in the modification of a Deliverable (iii) operation or use of some or all of the Deliverable in combination with products, information, specification, instructions, data, materials not provided by other party.

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20/08/2024

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- 9.3 Tata Technologies warrants that, the performance of this MoU will conform to the specifications as per the relevant industry standards. The warranties described herein are exclusive and JECC KERALA hereby waives any and all other warranties, whether expressed or implied, including any implied warranty of merchantability, title, non-infringement or fitness for particular purpose or use.
- 9.4 Parties are duly constituted entities under Applicable Law and has all necessary authorizations, valid licenses, approvals, permits, and full power and authority to execute this MoU and to consummate the transactions contemplated herein.

## 10 LIMITATION OF LIABILITY:

- 10.1 Tata Technologies shall be excused and not be liable or responsible for any delay or failure to perform services or failure of the services under this MoU to the extent that such delay or failure has arisen due to reasons not attributable to Tata Technologies and such reason should be proven beyond reasonable doubts to JECC KERALA. The total cumulative liability of either party arising from or relating to this MOU shall not exceed the total amount paid to tata technologies by customer under this MOU that gives rise to such liability (as of the date the liability arose) during the preceding 12 months; provided, however, that this limitation shall not apply to any liability for damages arising from (a) willful misconduct (b) claims related to personal injury or damage to property.
- 10.2 In the event that Tata Technologies is delayed or prevented from performing its obligations due to such failure or delay on the part of or on behalf JECC KERALA, Tata Technologies shall be allowed an additional period of time to perform its obligations with mutual agreement.
- 10.3 In no event parties shall be liable to the other for any special, indirect, incidental, consequential, exemplary or punitive damages, loss of profit or business or loss of data arising in any way out of this MoU, however caused, under the claim of any type or nature, based on any theory of liability (including contract, tort or other theories of law), even if advised of the possibility of such damages.

## 11 TERMINATION AND ITS EFFECTS:

- 11.1 This MoU shall automatically come to an end on the expiry of the term mentioned hereinabove unless terminated herein below.
- 11.2 It is specifically agreed between the Parties that the Parties will not have any right to terminate this MoU till the period of completion of 36 months after establishment of IIC with or without any cause commencing from the date of execution of this agreement.

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*Signature*  
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- 11.3 It is specifically agreed between the Parties that in case of termination of this MoU by either party due to breach committed by other party, the defaulting party shall be liable to pay damages and losses suffered by other party due to the breach committed by defaulting party.
- 11.4 Either Party may terminate this MoU, in the event of any proceedings in bankruptcy, insolvency or winding up by or against the other Party or for the appointment of an assignee or equivalent for the benefit of creditors or of a receiver or of any similar proceedings.
- 11.5 In the event of termination or expiry of this Agreement, JECC KERALA will operate IICC, however it is further clarified that at all times the ownership of equipment, machinery, tools and software procured by any of the Parties as per terms of this agreement for the said project shall reside entirely with JECC KERALA and which shall be used only for the purpose of IICC.

**12 PUBLICITY:**

No Party shall use any name, mark or symbol of the other Party in any publicity release or advertising material or for any other purpose whatsoever nor shall publicize any information pertaining to this MoU or the other Party without securing prior written consent of the other Party, which consent shall not be unreasonably withheld or delayed.

**13. AUDIT:**

No Audit will be allowed without providing any 30 days advance notice and Tata Technologies will only be liable to provide documents related to Project provided they are not confidential in nature.

**14. ARBITRATION:**

In case any dispute or difference arises between the Parties as to any term and/or conditions of this MoU, the Parties shall promptly meet and attempt in good faith to resolve such dispute or difference by amicable negotiations; Provided, that if the same is not so resolved within 30 days, the matter shall be referred to the sole arbitrator mutually appointed by the Parties. The arbitration proceedings shall be conducted in accordance with the Arbitration and Conciliation Act, 1996, as amended from time to time and the venue of such arbitration shall be Kerala, India only and the award or awards in such arbitration shall be final and binding on the Parties.

*A. K. Kuttan*

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*ab*  
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15. GOVERNING LAW AND JURISDICTION:

The provisions of this MoU or any other document entered into between the Parties herein shall be construed, interpreted, governed by and enforced in accordance with Indian law. Subject to the arbitration clause, Pune courts shall have exclusive jurisdiction for the purposes of this MoU.

16. NO THIRD-PARTY RIGHTS:

A person who is not a party to this MoU shall not have any right to enforce any term of this MoU.

17. COUNTERPARTS:

This MoU shall be executed in two counterparts, each of which shall be deemed as original, but all of this together shall constitute one and the same instrument.

18. SEVERABILITY:

Should any portion of this MoU be contrary to, or in violation of any law and consequently of no effect, the remainder of this MoU shall be valid and remain in force notwithstanding the invalidity of such portion.

19. AMBIGUITIES:

Any ambiguous language in this MoU shall be interpreted as to its fair meaning, and not strictly for or against a party. Matters not provided for in this MoU shall be mutually decided by the Parties in writing and decision so agreed upon shall be final and binding on the Parties.

20. AMENDMENT:

The Parties to this MoU may, add, delete, amend or alter all or any of the terms and conditions of this MoU as mutually agreed upon from time to time and such modification and changes shall not be effective until the same are in writing and duly signed by the authorized representatives of the Parties.

21. NON-WAIVER:

No waiver, delay or failure by a party in enforcing any of the provision/s of this MoU shall prejudice or restrict the rights of such party under this MoU nor shall waiver by a party of any breach operate as a waiver of any subsequent breach. The rights, powers and remedies provided to each party in this are in addition to, and do not exclude or limit, any right, power or remedy provided by law.

22. NOTICES:

All notices and correspondences to a party shall be deemed to be properly served if sent to their respective addresses mentioned herein above, by regular post mail, postage prepaid or commercial overnight courier. For enabling swift business communications,

*Handwritten signature*  
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*Handwritten signature*  
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the Parties shall provide their email addresses to expedite official correspondences and documents.

23. ENTIRE MOU:

This MoU is binding on all parties and this MOU cannot be modified, amended, altered or supplemented except by an MoU in writing signed by the duly authorized representatives of the Parties.

IN WITNESS WHEREOF, the Parties-here to have executed this MOU as of the date first above written.

Jyothi Engineering College,  
Jyothi Hills, Vettikkattiri,  
Cheruthuruthi, Kerala

Tata Technologies Limited

Fr. Thomas Kakkassery  
Fr. Thomas Kakkassery (Sep 1, 2020 10:50 GMT+5.5)

Anand Bhade  
Anand Bhade (Sep 1, 2020 10:25 GMT+5.5)

Signature:

Name: Fr. Thomas Kakkassery

Designation: Manager, Jyothi Engineering College

Signature:

Name: Anand Bhade

Designation: President (APAC)

Witnesses:

1.

2.

Witnesses:

1.

2.

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*manay*

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**Annexure-1 BOM**

<b>Equipment</b>	<b>Make / Model</b>	<b>Specification</b>	<b>QTY</b>
Industrial Workstation	HP Series or equivalent	32 GB RAM, NVIDIA Qdr 4GB, Intel XeonW-2123 3.6	10
Monitor	HP Z22N or equivalent	4C, 1TB HDD, USB Keyboard & USB Optical Mouse	20
Furniture for workstation	Industry equivalent	IPS Display, Narrow Bezel	11
Server	HP Series or equivalent (with Monitor)	32 GB RAM, NVIDIA Qdr 4GB, Intel XeonW-2123 3.6	1
<b>Technology Tools for design and Development</b>			1 Set
Creo Essentials	PTC		
Creo Direct	PTC		
Creo Interactive Surface Design Extension	PTC		
Creo Flexible Modeling Extension	PTC		
Creo Layout	PTC		
Creo Manikin	PTC		
Creo Manikin Analysis	PTC		
Creo Mechanism Dynamics Extension (MOO)	PTC		
Creo Advanced Framework Extension (AFX)	PTC		
Creo Options Modeler Standard Application	PTC		
Creo Piping Design Extension	PTC		
Creo Advanced Rendering Extension	PTC		
Creo ModelCHECK Extension	PTC		
Creo View ECAD	PTC		
Mathcad P	PTC		
Windchill	PTC		
Creo Primitives and Multi-Surfaces Milling Extension	PTC		
Creo Production Machining Extension	PTC		
Creo Plastic Advisor Extension	PTC		
Creo Progressive Die Extension (PDX)	PTC		
Creo NC Sheetmetal Extension	PTC		
Creo Computer Aided Verification Extension	PTC		
ThingWorx SCO Internship	PTC		
AR Vuforia studio	PTC		
<b>MASTERCAM</b>			1Set
Mastercam Lathe	Mastercam		
Mastercam Advanced Mill	Mastercam		
Mastercam Wire	Mastercam		
Mastercam Access (MU12)	Mastercam		1Set
<b>Analysis Tools MSC</b>			
Adams Machinery Studio	MSC		1Set
MSC Apex modeler with Patran Bundle	MSC		
MSC Apex Structures	MSC		
MSC Nastran linear structure package	MSC		
Simufact Forming Hub	MSC		

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Equipment	Make / Model	Specification	QTY		
Simufact Forming parallel core	MSC				
ScFlow standard set	MSC				
<b>Analysis Tools FEAST</b>					
Linear static analysis	ISRO	Easy to use indigenized, intuitive, user friendly Technology tools for various analysis of structures, models, parts, assemblies comprising of Linear analysis, random response analysis, thermal analysis, Buckling analysis etc.	1Set		
Free-vibration analysis	ISRO				
Buckling analysis	ISRO				
Transient response	ISRO				
Frequency response	ISRO				
Random response	ISRO				
Base excitation	ISRO				
Inertia relief method	ISRO				
Visco-elastic Analysis	ISRO				
Thermal Analysis	ISRO				
<b>Electric Vehicle Training Kit</b>	TATA Technologies				2 Sets
EV Kit Chassis				Aluminum/steel Frame, Wooden Top, Plastic board for wiring Connection	
Wheel Rim & Tyre		12 Inch Car Alloy/Steel Rim Wheel			
Battery		12V, 100AH (4 Nos.)			
Crimping Lugs		As needed			
Battery Packing					
BMS					
Motor		48V 2000W			
Motor Controller		100A			
Throttle Pedal					
Solar Panel		50watt each			
Solar Charge Controller		48V			
Wire, Solar Panel to EV KIT		6 Sq mm/4sqmm			
SMPS		230V Input, 48V Output			
Selector Rotary Switch		30A			
MCB		30A			
Fuse		30A			
Emergency Stop Switch		30A			
Start Switch		30A			
Stop Switch		30A			
Break Switch		30A			
HeadLight					
Tail Light					
Banana Plugs & Socket					
Wires 12V		2.5 Sqmm			
Electric Wiring raceways					
Grommet					
Reverse Camera					
Ultrasonic Sensor					
Small LEDs with holder					
Big LEDs with holder					
Buzzer					
DC to DC convertor	48V to 12V				

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Equipment	Make / Model	Specification	QTY
DC to DC convertor		12V to 5V	
Nextion TFT Display		7" Size	
Current Limiting Sensor			
Arduino Mega Controller			
Temperature Sensor			
Thermal Resistive Sensor			
<b>ICE Section</b>			
Transmission / Gearbox Demo Kit			
Cooling System			
Fuel System and Urea Handling			
Exhaust System			
Commercial Vehicle Chassis Structure			
Rear Axle			
Engine and Transmission Mounts			
HVAC Demo Kit			
Electronic Ignition System of and Automobile 4 Wheeler			
Demostration Board of Working Model of MPFI System with Motorized Control			
Instructions Kit for Charging System			
Instructions Kit for Starting System			
Lighting and Wiring System			
Tractor cut section (Working Model)			
<b>Industrial Robotics</b>			
	Yaskawa or equivalent		Fully Integrated Cell of 2 Robots with conveyor
YASKAWA AR1440	Yaskawa or equivalent	Robot 12kg Payload, 6 Axis	1
YASKAWA GP12	Yaskawa or equivalent	Payload: 12 Kg, 6 axis for handling	1
Robot Controller YRC1000			
Welding Power Source (MotoPAC-WR100) with arc welding package		350 amps short arc Power Source	
Programming Pendant		Touch screen pendant with Windows CE operating system and full color 5.7" LCD touch-screen display	
Standard welding cell with safety fence, fixture, HMI			
Isolation transformer			
PLC Panel			
Welding Table			
Pick and Place table			
Input conveyor for palletizing			
Earthing cable			
Robot Power Wiring		6 mm Sq. 1 core Copper cable	
Robot Power Wiring		10 mm Sq. 4 Core copper cable	
Welding wire, gas hose and gas regulator		4 mm Sq. 3 core copper cable	
Piping/Hose pipe upto robot gripper			
<b>Additive Manufacturing</b>			
			1

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Equipment	Make / Model	Specification	Qty
3D Printer Plastics	Ultmaker 3 Extended or equivalent	FDB, Dual extrusion print head with a unique auto-nozzle lifting system and swappable print core, Build Volume: Left nozzle: 215 x 215 x 300 mm Right nozzle: 215 x 215 x 300 mm	10
I Get it	TATA Technologies	e-Learning Tool	1
Advance Manufacturing			
Vertical Machining Center with Automatic Tool Changer	Ace Micromatic or equivalent	Spindle power: 5.5 / 3.7 kW Three tier indication lamp, Table longitudinal travel (X - Axis)=400, Table size: 650 x 300	1
3D Scanner for Re-Engineering & Upgradation	EINSCAN OR equivalent	SE, White light scanning, 700x700x700 (mm), 40 W.	1
Tool Box (with Measuring tools)	Standarad	Screw Driver Set, Spanner set, Measuring tools, Plier set, Allen Key Set, Fillar Gauge etc.	1
Hydraulic Hand Pallet	ASPIRANT or Equivalent	Lowered Fork Height 85 mm Lifting Height 115 mm Raised Height 85 + 115 = 200 mm Length of Fork 45" ( 1150 mm ) Overall fork Width 27" ( 685 mm ) Individual Fork Width 160 mm Width Between Forks 365 mm Steering / Load Wheel Tandem Nylon Chasis Colour Yellow	1
Compressor	KND or equivalent	3.0 H.P Double Piston With 210 Ltr Tank Capacity, 3.0 H.P 3 Phase Motor, V-Belt, Automatic Switch, Safety Valve, Drain Nut, Air Filter, Protection Guard, Guage, R.P.M-750, 11.8 Cft, 150 P.S.I, 10 Kg Working Pressure.	1

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*Thomas Kabbay*

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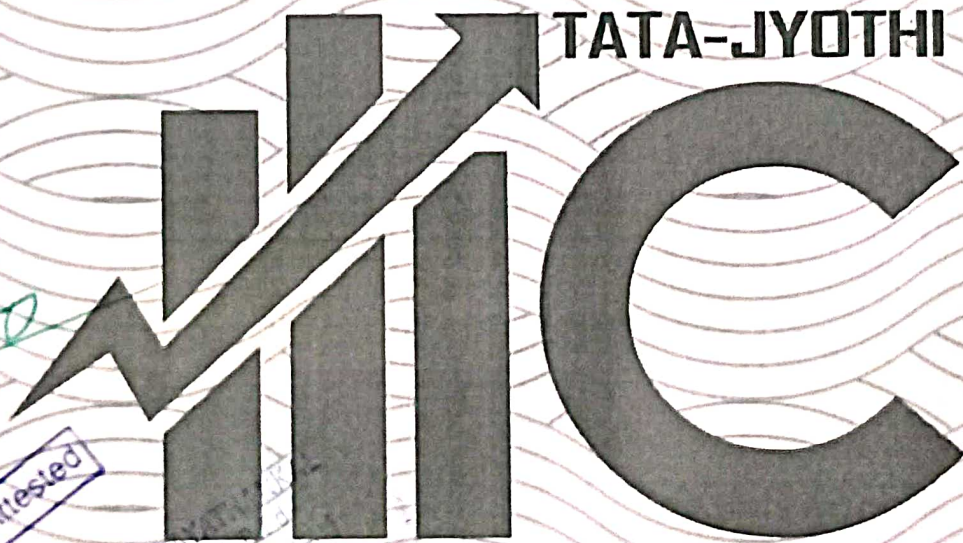
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**Jyothi**  
Engineering College



**TATA-JYOTHI**

**Integrated Industrial Incubation Centre**

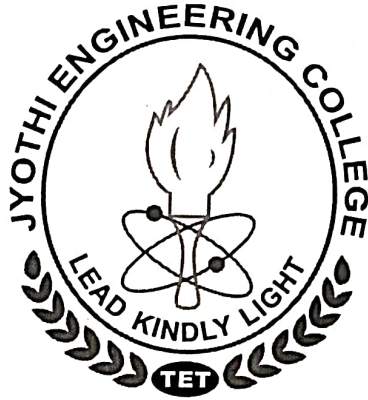
**COMPETENCY BASED ENGINEERING EDUCATION  
IN ASSOCIATION WITH**

**TATA  
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[www.jecc.ac.in](http://www.jecc.ac.in)

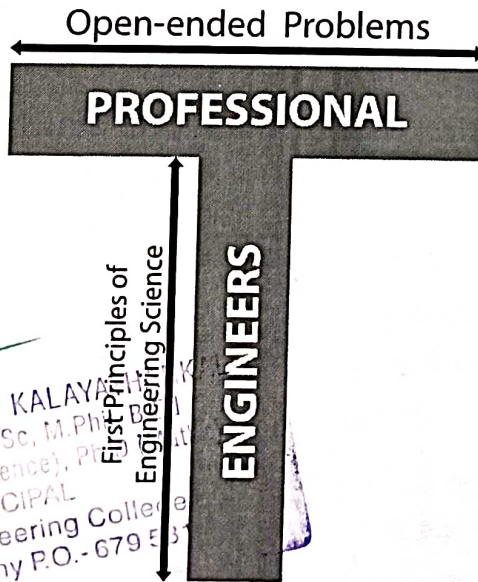
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CREATING TECHNOLOGY  
LEADERS OF TOMORROW  
ESTD 2002

# Creating Technology Leaders of Tomorrow



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## Jyothi T - SHAPED PROFESSIONALS

Jyothi Engineering College (JEC) set up in 2002, under the aegis of Thrissur Educational Trust, founded by the Catholic Archdiocese of Trichur, is a leading Engineering College in Kerala. The Archdiocese of Trichur has an illustrious track record of a century and a quarter in the education sector. We at Jyothi Engineering College are aware that our stakeholders, including students and recruiters, look for reliable information on quality education offered. Jyothi Engineering College is a NAAC accredited institution affiliated to APJ Abdul Kalam Technological University, Kerala. The NAAC instrument is developed to objectively assess and grade institutions of higher education. Five of the undergraduate programs offered by Jyothi Engineering College have NBA accreditation, which indicates that we are well recognized for the quality of education we offer. We are periodically evaluated for this stringent NBA accreditation criteria to ensure we sustain the mandated quality levels.

The worlds of study and work have changed dramatically. Students of today require different sets of skills than those of previous generations. We are in the midst of the fourth industrial revolution and the predictions are that 85% of the jobs that will exist in 2030 have not been invented yet. JYOTHI hence prepares students to become T-Shaped professionals, i.e., professionals who have in-depth expertise in their discipline as well as a breadth of competencies required in the twenty-first century. Industry seeks engineers with these skills. In order to train our students to become "T" shaped professionals, so that they are "future ready", we have set up an incubation centre, Integrated Industrial Incubation Centre (IIIC), in association with TATA Technologies.

In order to help students become "job creators" rather than "job seekers", Jyothi Engineering College has also set up a Technology Business Incubator, JECTBI, to create technology based new enterprises, foster an entrepreneurial spirit among students and commercialize R&D output. Additionally, Jyothi Engineering College offers a vibrant, beautiful, and green environmentally friendly campus, and excellent infrastructure for students, to aid the teaching and learning process. For more information visit [www.jecc.ac.in](http://www.jecc.ac.in)



### Our Vision:

Creating eminent and ethical leaders through quality professional education with emphasis on holistic excellence.

### Our Motto:

Creating Technology Leaders of Tomorrow

### Our Mission:

- ✪ To emerge as an institution par excellence of global standards by imparting quality engineering and other professional programmes with state-of-the-art facilities.
- ✪ To equip the students with appropriate skills for a meaningful career in the global scenario.
- ✪ To inculcate ethical values among students and ignite their passion for holistic excellence through social initiatives.
- ✪ To participate in the development of society through technology incubation, entrepreneurship and industry interaction.



# Courses offered

BTech | MTech | PhD

## We offer the following Bachelor of Technology Courses:

- Civil Engineering
- Computer Science & Engineering
- Electronics & Communication Engineering
- Electrical & Electronics Engineering
- Mechanical Engineering
- Mechatronics Engineering
- Artificial Intelligence & Data Science
- Robotics & Automation

## We also offer the following Master of Technology Courses:

- Computer Science & Engineering
- Power Electronics
- Transportation Engineering
- Communication Engineering & Signal Processing
- Industrial Automation & Robotics

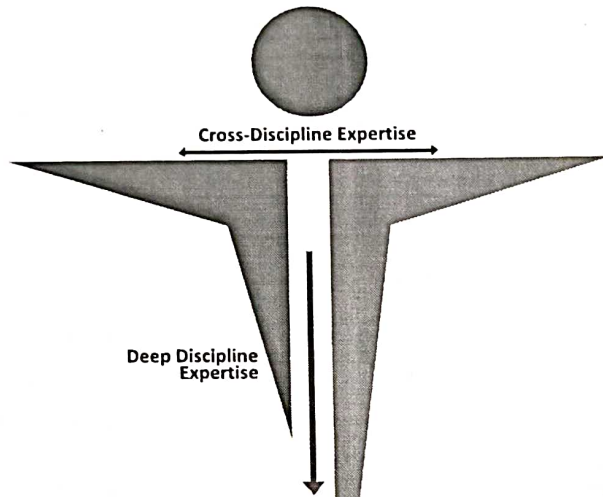
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The worlds of study and work have changed dramatically. Students of today require different set of skills than those of previous generations. We are in the midst of the fourth industrial revolution and the predictions are that 85% of the jobs that will exist in 2030 have not been invented yet. This volatile, uncertain, complex and ambiguous (VUCA) environment requires specialized competencies and expertise beyond what a traditional Bachelor of Technology program offers.



# Integrated Industrial Incubation Centre

# IIIC



Jyothi Engineering College prepares students to become T-Shaped professionals, i.e., professionals who have in-depth expertise in their discipline as well as a breadth of competencies required in the twenty-first century. Industry seeks engineers with these skills. The vertical bar on the T-shaped person is an indication of the depth of knowledge and skills in their chosen engineering stream whereas the horizontal bar represents the person's competencies in interdisciplinary areas and life skills. This contextual knowledge helps in giving students a broader perspective. T-shaped skills – or a T-shaped person – has qualities that make that employee valuable; they possess excellent knowledge of and skills in specific areas and are good at working with others in a collaborative way.

In order to train our students to become "T" shaped professionals, so that they are "future ready", we have set up an incubation centre, Integrated Industrial Incubation Centre (IIIC), in association with TATA Technologies.

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# IIIC Courses

(120 hours) in association  
with TATA Technologies

- ✦ Product Design and Development
- ✦ Design Engineering
- ✦ PLM Application Engineering
- ✦ Product Verification Analysis
- ✦ Electric & Connected Autonomous Vehicles
- ✦ Electric Vehicle Repair and Maintenance
- ✦ IIoT Engineering
- ✦ Advanced Industrial Robotics
- ✦ Advanced Manufacturing Engineering
- ✦ Machine Tool Operator / CNC Operator

Tata Technologies will have its own assessment process to check the competency level of students. If the desired level is not achieved then a student will have to repeat the course. However only one more attempt will be allowed. Certificates will be issued to only successful candidates.

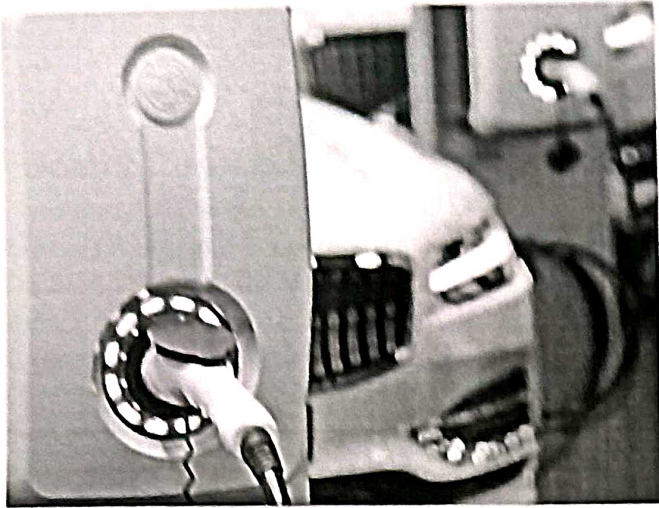
In addition, IIIC will also offer the following 40-hour courses:

- ✦ Entrepreneurship and New Venture Creation
- ✦ Business analytics- basics
- ✦ Basics of manufacturing and quality
- ✦ Cost Engineering
- ✦ Communication skills

After successful completion of all modules of a particular course, the eligible student will be awarded a certificate of achievement.

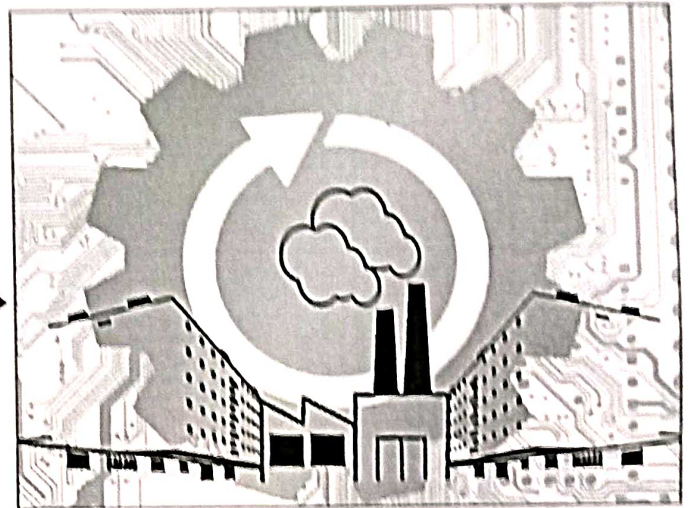






Electric Vehicle & Connected Autonomous Vehicle

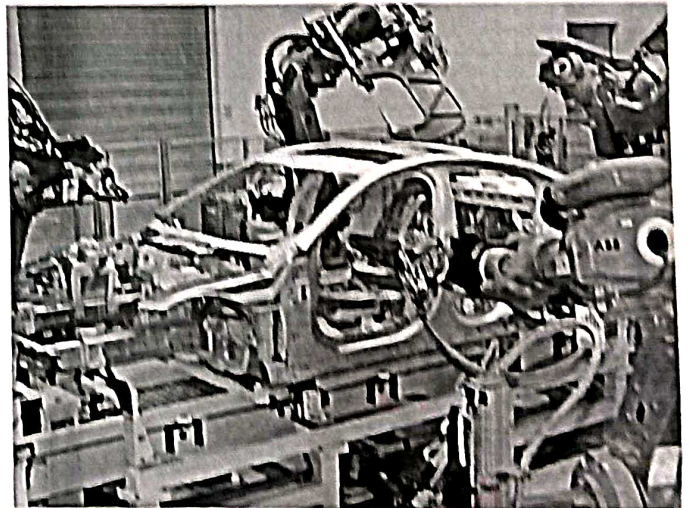
IloT Engineering



Advanced Manufacturing Engineering



Advanced Industrial Robotics



Machine Tool Operator / CNC Operator



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True Copy Alteryx  
The Program is...  
This is a...  
John...  
L...



# IIIC Courses

outlines

## Product Design & Development:

- Overview of Product Design and Development Process
- Market Research & Competitive Strategy,
- Demand Pattern for the product and Current trends
- Benchmarking with competitors' products
- Customer Needs Requirements
- Quality Function Deployment
- Define Product Specifications & Success Criteria
- Monitoring tools and Techniques
- Product Architecture
- Develop a Cost Model of the Product
- Making Trade-Offs Wherever Necessary
- Collection of ideas and Selection criteria
- Screening new products (Inventions & Innovation)
- Creativity and problem-solving Methods
- Concept Design, Selection & Testing
- Understanding of Industrial Design
- Design Conceptualization
- Ergonomics & Perceived Quality
- Detail Design and Engineering
- Bill of Material
- Material Selection & Design Considerations
- Concurrent Engineering
- Manufacturability (Metals, Plastics & Composites) etc.
- DFM, DFA, DFMEA, PFMEA.
- Prototyping, Verification & Validation
- Program Management
- Gateway Process of Product Development
- Product Lifecycle Management
- Case Studies of Japanese & European OEMs.
- Importance of Service (Maintenance & Repair)
- Product Up-gradation,
- Change & Obsolescence Management

## Design Engineering:

- Concept & Importance of Design Thinking
- Brainstorming
- IDEA Generation & Refinement
- Divergence and Convergence of Design Thinking Process
- Field Work Research
- Concept Generation
- Concept Selection and Testing
- Product Design and Development (PDD)
- Introduction to Design Tools (Computer Aided Design Software)
- Concept Creation and 3D Modelling
- Detail Design & Engineering
- Design Considerations (Plastics, Sheet Metal, Forgings & Castings)

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- Design for Assembly and Design for Manufacturing
- Design failure mode and effect analysis (DFMEA)
- Kinematic Analysis
- Overview of Design Validation
- Product Drawing Creation,
- Geometric Dimensioning and Tolerancing (GD&T)
- Bill of Materials (BOM)

### **PLM Application Engineering:**

- Concepts of Product Lifecycle Management (PLM)
- PLM in Product development process
- Benefits of Product Lifecycle Management (PLM)
- PLM Architecture
- Need of Architecture
- Logical and Physical Architecture
- 3-TIER Architecture
- PLM prospects
- Industrial revolution with PLM,
- Goals and PLM footprints
- PLM Software tools and Features
- Product Data Management (PDM) Integration with Computer Aided Design (CAD)
- Version Management
- Variant Management
- Managing Standard Parts
- Bill of Material (BOM) Management

### **Product Verification Analysis:**

- Introduction to Finite Element Analysis (FEA).
- Why FEA?
- Application of FEA
- Advantages of FEA in different fields
- Basic Equation
- Introduction to meshing
- Finite Element Analysis Process
- Types of Analysis
- Concept of Pre-processing,
- Concept of Solving
- Concept of Post Processing
- Interpretation of Results
- FEA Tools by using computer aided engineering tools

### **Electric Vehicle & Connected Autonomous Vehicle**

- Introduction to Automated vehicle
- Connected Electric Vehicles
- Electric vehicle Architecture
- Important components of EV
- Sizing of components
- Motors
- Motor Controller
- Battery Pack
- Battery Management System
- Charging System

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- Battery Swapping Concept
- Regenerative Braking
- Connected and Autonomous Vehicle Technology
- Sensor Technology for Advanced Driver Assistance Systems
- Overview of Wireless Technology
- Wireless Networking and Applications to Vehicle Autonomy
- Connected Car Technology
- Vehicle Prognostics Technology
- Concept of Autonomous Vehicles
- Autonomous Vehicle Hardware and software
- Standards and Regulations in Autonomous Vehicle Technologies

## Electric Vehicle Repair & Maintenance:

- Electric vehicle Architecture
- Important components of EV
- Sizing of components
- Motors
- Motor Controller
- Battery Pack
- Battery Management System
- Charging System
- Battery Swapping Concept
- Regenerative Braking
- EV Diagnostics
- EV Repair and Maintenance
- Latest Trends

## Mechatronics & IIoT Engineering:

- Introduction to Mechatronics
- Mechatronics components and systems
- Block Diagram Representation
- Data Acquisition
- Microcontroller System
- Modelling and Analysis of Mechatronics System
- Introduction to IoT (Internet of Things)
- Electronics for the Internet of Things
- Software for the Internet of Things
- IoT System Architectures (Theory)
- Introduction to ISO Layers.
- Protocols [TCP/IP, MQTT, HTTP]
- Communication Modes
- Introduction to IoT cloud platforms
- Sensors and Peripherals
- IoT Applications
- Advancements

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## Advanced Industrial Robotics:

- Introduction to Robot
- Types of Robots and their performance capabilities
- Coordinate system
- Important Components of Robots
- Robot Specification



- Kinematics of Robots
- Applications of Robot & Mounting Options
- Selecting Assembly Machines, Feeding and Transfer of parts (Types of Grippers)
- Applications of Robots in Manufacturing and Assembly, Sensors used in Robotics
- Product Design for Robotized Manufacturing
- Types of Assembly Line Robots
- Key Benefits of Robotic Line Over Traditional Include
- Robot Task Definition (RTD)
- Motion Trajectory Planning
- Robot Workspace & Robotic Work Cell
- Welding Robots & Benefits of Robot Arc Welding
- Problems for Robots in Arc Welding
- Off-Line Programming (Robotics)
- Material Handling Robots
- Robot Arm Kinematics
- Robot Safety Instructions & Workspace and Safety Zone
- Working of Robot: Power on the Robot, Axis Limits, Operation Modes, HMI, PLC
- Jogging the Robot
- Robot Online Programming

### Advanced Manufacturing Engineering:

- Introduction to Industry 4.0
- Manufacturing Processes
- Industrial Robotics
- Advanced Robotic Programming
- Robotic Applications
- Robotic Arc Welding
- Advanced CNC Programming
- Advanced Additive Manufacturing
- Design for Additive Manufacturing
- Manufacturing of modified Engineering Components

### Machine Tool Operator/ CNC Operator:

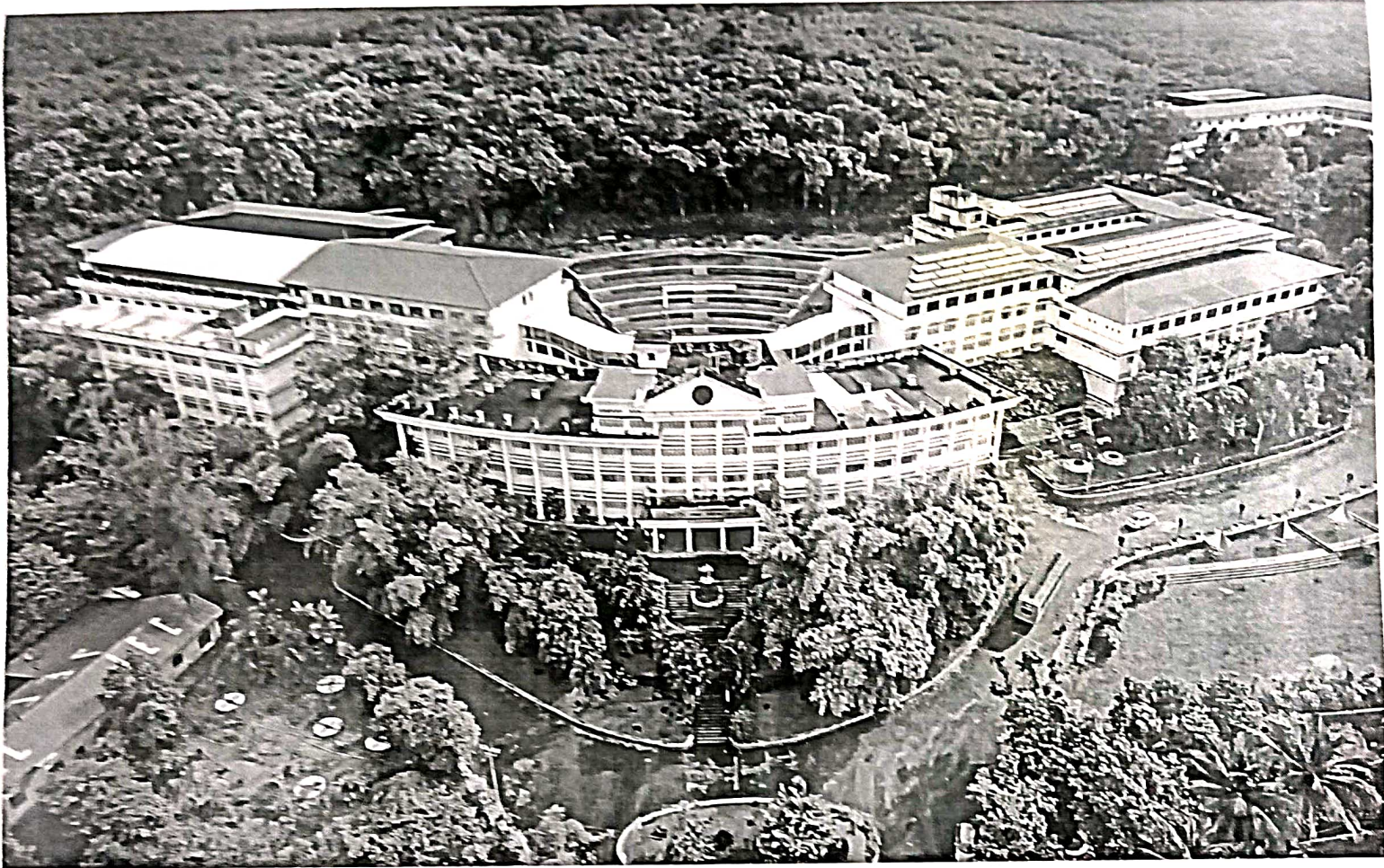
- Overview of Manufacturing Processes
- Working Principle, Milling Machine & CNC Machine
- Types of CNC Machine control units
- Advantages & Disadvantages
- CNC Operations
- Tools used for CNC operations
- Difference Between CNC Turning and VMC Machine
- CNC Machining Centre and Specifications
- Machine Coordinate System
- Basics of Programming
- Table of Important G codes & its explanations
- Basic M Codes used in Program
- Cutter Radius Compensation
- Multiple Repetitive CAN Cycle
- VMC Tools & Offset settings
- Advanced Additive Manufacturing
- Design for Additive Manufacturing

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# Get ready to Engineer your future...

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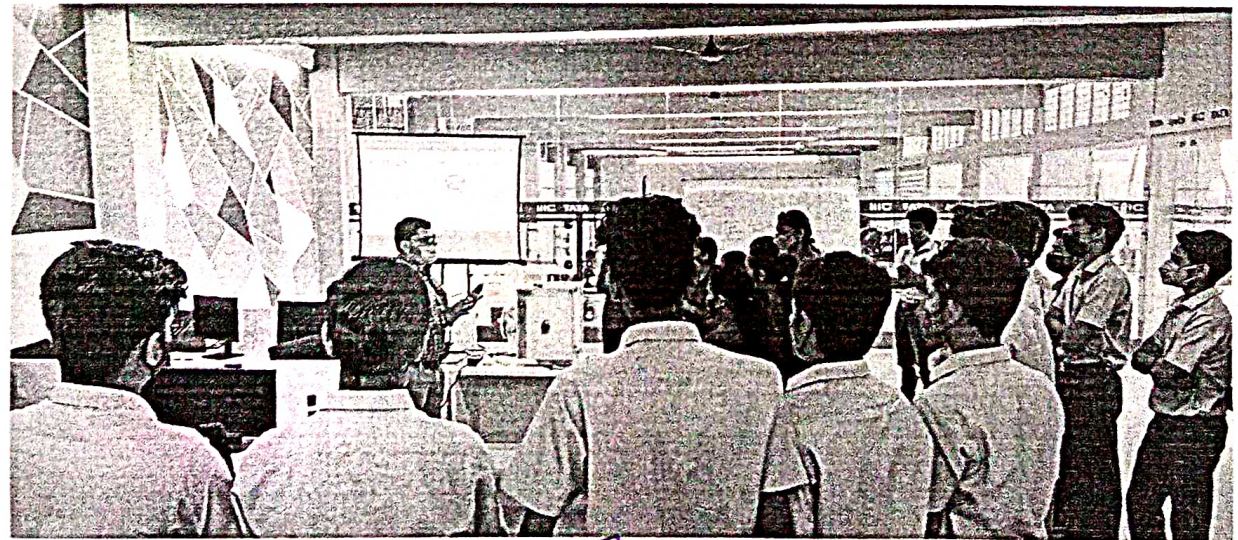
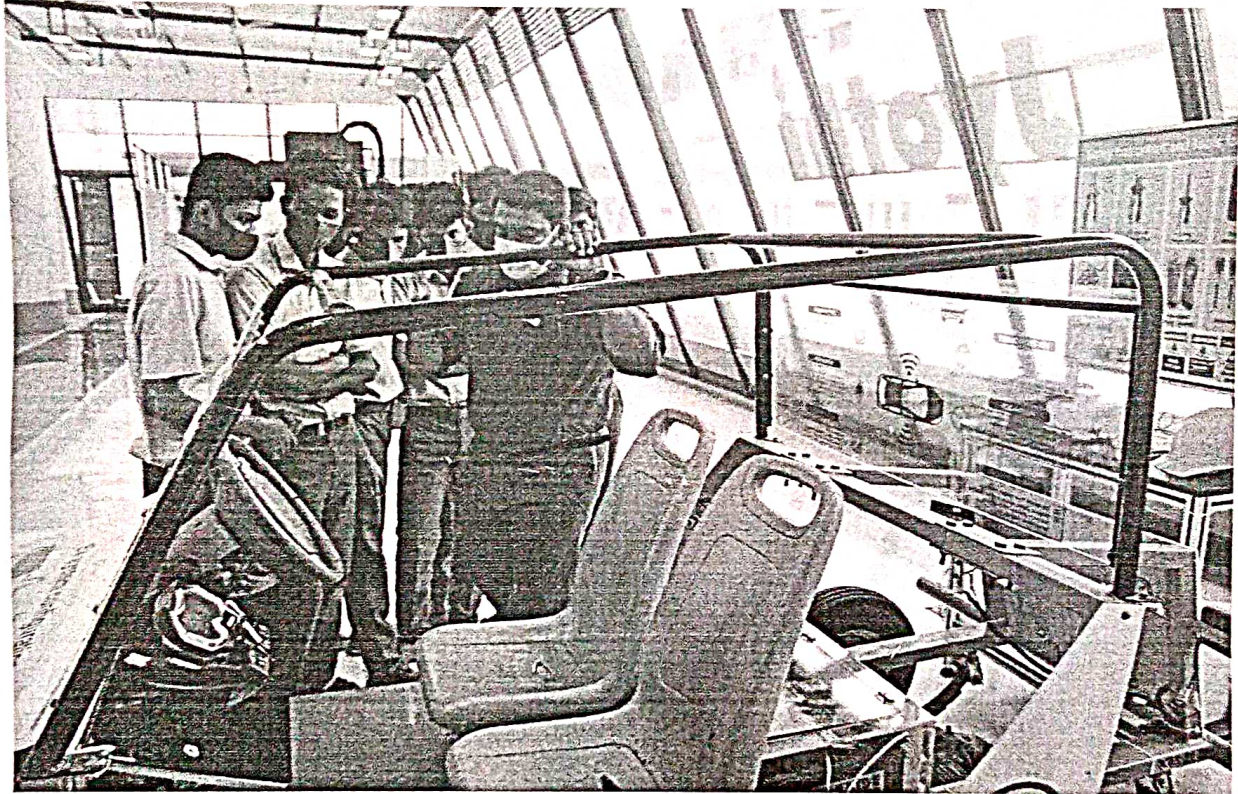
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## Familiarization of IIIC Sarvodayam VHSE Arayampadam



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