OUR FOUNDER

Padma Shri Dr. TMA PAI

" Give an individual professional education and you have given him a lifestyle."

FOUNDER

MANIPAL EDUCATION & MEDICAL GROUP

Visionary| Philanthropist| Physician| Educationalist| Banker

MANIPAL SKILL DEVELOPMENT CENTER (MSDC)

(A Unit of Dr. TMA Pai Foundation, Manipal)
Approved 'Training Provider' under
National Skill Development Corporation (NSDC), Govt. of India

Dr. T.M.A. Pai Foundation was established in 1981 to perpetuate the memory of Padma Shri Dr. Tonse Madhava Ananth Pai, Physician, Educationist, Banker, Philanthropist, Visionary and the Founder of internationally renowned Manipal Educational Institutions. The trust was instituted with an objective to support and promote the advancement of educational and skill development activities for the underprivileged people of Konkan region. The foundation has established many schools, polytechnic and degree colleges providing quality education for over 5000 students.

Manipal Skill Development Center (MSDC), a unit of Dr TMA Pai Foundation, an approved Training Provider under National Skill Development Corporation (NSDC), Government of India has been established to bridge the large gap in the demand and supply of skilled manpower in the country, a tiny effort contributing towards realizing ambitious Skill India Mission, Government of India.

VISION:
To create a world-class skill development center at Manipal to meet the growing industrial requirements of the country and to address the challenge of imparting the skills required to leverage the demographic dividend.

Objectives:
- To contribute significantly to the target of skilling up the youth of India, especially in Karnataka, by establishing skill training institute equipped with the state-of-the-art machines and with well-trained faculty.
- To involve industries through industry sponsored centers of excellence in different skill areas and organizing internships and apprenticeships as a part of the curriculum.

MSDC has established 18 state-of-the-art skill schools at Dr TMA Pai Polytechnic Campus, Manipal, to address the challenges of disseminating desired skillsets to youth of the region and to gain suitable employment.

The Skill Center offers:

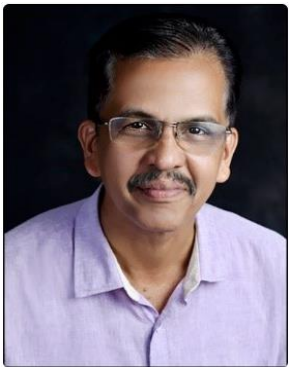
1. Short/long term skill certificate/diploma programs for unemployed youth, school/college dropouts and students desirous of taking up skill training along with their regular degree programs.
2. Internship/industrial training and professional certification programs of different duration for diploma, engineering and degree college students to provide hands on training to make them industry ready.
3. Up-skilling and re-skilling opportunities to the industry workforce and faculty development programs for academia to bridge the skill gaps.
4. Summer camps/experiential learning programs for high school children to learn skills of their choice.
5. Entrepreneurship development programs for helping individuals in establishing their own business through training and handholding.

ADMINISTRATION

Sri Tonse Ashok Pai
President
Dr T.M.A. Pai Foundation

Sri Tonse Sachin Pai
Trustee
Dr T.M.A. Pai Foundation

Brig (Dr) Surjit Singh Pabla
Chairman
Manipal Skill Development Center



Dr. Narayana Shenoy K
Registrar
Manipal Skill Development Center

Skill Schools under MSDC:

1. School of IOT Skills
2. School of Robotics Skills
3. School of Drone Technology
4. School of Industrial Automation
5. School of Beauty and Wellness
6. School of CNC Machines Skills
7. School of Woodworking Skills
8. School of 3D Printing Skills
9. School of IT Skills
10. School of Refrigeration and Air-conditioning
11. Dreamzone School of Creative Studies (Fashion Design and Interior Design)
12. School of PCB Design and Prototyping
13. School of Power and Energy systems
14. School of Animation Technology
15. School of Electric Vehicle Skills
16. School of Automotive Skills
17. School of Drone Remote Pilot Training skills
18. CADD Centre

Programs offered at MSDC:

Programs	Duration	Who can attend	Benefits
Short Term Training Program (STTP)	01 week	Students of ITI, Diploma, Engineering and Degree Colleges, Working Professionals, School/College Faculty, School/College dropouts, Any individual to pursue his/her passion.	80% Hands on practice to enhance employability and get suitable employment, Job Promotion, Self-employment.
Internship / Industrial Training *	1 - 4 months		
Professional Certificate **	3 - 6 months		
Diploma Programs **	One year		
Faculty Development Programs (FDP) Up-skilling/Re-skilling Programs	Varying duration		
Summer/ Winter camps	2 - 4 weeks	8th - 12th Std School children	Identify academic career

* Internship / Industrial Training programs are designed as per the duration and guidelines of Department of Technical Education (DTE), Visvesvaraya Technological University (VTU) and Manipal Academy of Higher education (MAHE), Mangalore University and other universities.

** Professional Certificate and Diploma programs are designed considering NSDC qualification packs.

Upon successful assessment of training program, the participants will be awarded with a certificate by MSDC jointly with collaborating industry/MIT/MAHE.

Program Fee: STTP – ₹ 3000/-
Professional Certificate/Diploma - ₹ 25000/- to ₹ 100000/-
Internship/ Industrial Training - ₹ 6000/- to ₹ 20000/-
Summer/Winter Camps - ₹ 2000/- to ₹ 4000/-

1) **School of Internet of Things (IoT) Skills:** Internet of Things (IoT) is gaining popularity in industrial and home automation. The school is equipped with training kits and collaborated with industry experts from DLithe Consultancy Services, Bangalore, for imparting hands on exposure to simulate real-world environment where students (beginners and advanced) acquire skills required to design, develop, and implement IoT solutions.

Sl No.	Programs Offered	Duration	Who can attend	Job Prospective
1	Internship / Industrial Training	4 Weeks (80 hrs)	Students pursuing Degree with Science and Engineering streams, Working Professionals	IOT Beginner Level Trainer
2	Internship / Industrial Training	16 weeks (640 hrs)	Students pursuing Degree with Science and Engineering streams, Working Professionals	IOT Trainer, Embedded Engineer

1. **Industrial Internship/Training on Internet of Things (IoT)**

Learning Outcomes: After completing this industrial internship/training, participants will be able to:

- Identify hardware and software requirements for designing an IoT application (Web/Mobile Device).
- Design and develop solution architecture.
- Perform IoT data acquisition using various platforms.
- Transfer data using Wireless / Wired communication protocols and wireless networking with IoT.
- Build prototype IoT devices and Testing.
- Work safely following health and safety standards: Understand the safety signs and instructions on the equipment, identify job–site hazards and follow safe habits in workplace.

Detailed Curriculum:

• MSDC overview, familiarization with other related skill centers. • Internet of Things (IoT) - Introduction, requirements, functions, architecture and components (hardware and software). • IoT enabling technologies, IoT communication and networking protocols, role of wired and wireless communication. • IOT Case Studies - Project Requirements (hardware & software) • How to Design IOT Applications (Web, Mobile, Device) • Sensors - Digital and Analog sensors and their working, Data Generators • IOT Data Acquisition & Platforms - Micro Controllers (Arduino uno/mega2560, esp8266/32 Rasberry-Pi), Real-time systems, and embedded software. • IOT Data Communication - How to transfer data by Wireless / Wired communication protocols, IoT Protocols: HTTP, MQTT, Peripherals topics UART, I2C, SPI, Interrupts • Networking with IoT – Basics of Wireless Networking, Web server- introduction, setup and configuration, publishing sensor(s) data. • Job site hazards, use of fire extinguishers, safe working practices and good housekeeping practices to prevent accident at work place. • Project work – Building IoT system for specific application and testing. • Preparing report and presentation which include: organization profile and the training received from week 1- 4 including project work.	Week 1 – 4 **Theory:** 20 hours **Practical:** 60 hours

2) School of Robotics skills: School is equipped with 5 industrial robots (collaboration with Autofina) with trained faculty for providing hands on exposure in programming and operation of robots for various applications such as Pick & place, Logistics Parcel Sorting, Part Sorting based on color and material, Box Palletizing, 2D Path following, Spray Painting and Spot welding. It is also equipped with 10 miniature robots such as humanoid, biped, spider, ant & line follower.

Sl No.	Programs Offered	Duration	Who can attend	Job Prospective
1	Short Term Training Program	01 Week (20 hrs)	ITI / Diploma Students / Working Professionals	Robot Operator in Manufacturing Industries
2	Internship / Industrial Training	4 weeks (100 hrs)	Students pursuing Diploma/ Degree with Science and Engineering streams, Working Professionals	Industrial Robotics Trainer / Robotics Programmer / Robotics Maintenance Engineer

1. **Short Term Training Program**

Learning Outcomes: After completing this short term training program, participants will be able to:

- Understand basic components and movements of robot and navigate it to the destination point manually.
- Write programs for Industrial Robots to perform Pick and place application.
- Test the programs and independently operate Industrial Robot for a specific application.
- Work safely following health and safety standards: Understand the safety signs and instructions on the Robots, identify job–site hazards and apply good housekeeping practices etc.

Detailed Curriculum:

- MSDC Overview
- Industrial Robotics – Overview, Robot Anatomy and Configurations.
- Robot specifications, Components and Control Panel.
- Demonstration of the Robot movements.
- Robot end effectors, fixtures, types of sensors.
- Safety precautions before Switching ON the Robot.
- Working of Teach Pendant.
- Logging in Operator mode, types of Operation mode.
- Pre-Homing and Homing of Industrial Robots.
- Executing programs in Operator mode.
- Develop program for a Pick and Place Robot, its testing and execution.
- Practice exercise on programming and operation of robot in operator mode.

2. **Industrial Internship/Training on Robotics**

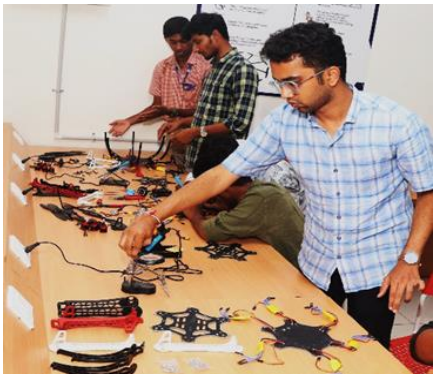
Learning Outcomes: After completing this industrial internship/training, participants will be able to:

- Understand components and movements of robot and navigate it to the destination point manually.
- Write programs for Industrial Robots to perform applications such as Pick and place, Part sorting, 2D Path following, Gluing, Spot welding and Spray Painting.
- Test the programs and independently operate Industrial Robot for various applications.
- Work safely following health and safety standards: Understand the safety signs and instructions on the Robots, identify job–site hazards and apply good housekeeping practices etc.

Detailed Curriculum:

On Job Training (OJT): • MSDC overview, familiarization with other related skill centers. • Industrial Robotics – Overview, Robot Anatomy and Configurations. • Robot Specification – Work Volume, Accuracy, Precision, Repeatability, etc • Robot Drive and control systems. • Assembling and Dismantling of the Robotic arm. • Demonstration of the Robot movements. • Robot end effectors, fixtures, types of sensors. • Machine Vision system in Industrial Robotics. • Methods of Robot Programming. • Robot specifications, Components and Control Panel. • Safety precautions before Switching ON the Robot. • Working of Teach Pendant. • Logging in Operator mode, types of Operation mode. • Pre-Homing and Homing of Industrial Robots. • Executing tutorial programs in Operator mode. • Health safety and environmental regulations at work place, safety signs and instructions associated with equipment/machines and operations. • Identify Job site hazards - tools, revolving and moving parts and naked wires etc. • Use of fire extinguishers, safe working practices and good housekeeping practices to prevent accident at work place and use of PPE.	Week 1 **Theory:** 10 hours **Practical:** 15 hours
On Job Training (OJT) and project work continued: • Robot Application in Manufacturing ➢ Material transfer and Loading and Unloading. ➢ Various Process operations ➢ Assembly and Inspection. • Executing programs in Operator mode. • Develop program for various industrial applications of Robot, its testing and execution.	Week 2 **Theory:** 10 hours **Practical:** 15 hours
Project work on programming and operation of industrial robot. Preparing report and presentation which include: organization profile and the OJT received from week 1- 4 including project work.	Week 3 - 4 **Practical:** 50 hours

3) School of Drone Technology: In collaboration with Aviocian Technologies, New Delhi, the school is equipped with 10 drones (Quadcopter and Hexacopter) for offering training in assembling, flying, repair & maintenance of drones by faculty certified from Director General of Civil Aviation (DGCA), Govt. of India.



Sl No.	Programs Offered	Duration	Who can attend	Job Prospective
1	Professional Certificate Program	02 Weeks (20 hrs)	Normal literacy of reading, writing and understanding with age restriction of above 18 years.	Assemble and fly Micro category Drones for non-commercial purpose.

1. Professional Certificate Program on Drone Assembly, Simulator Training, and Piloting

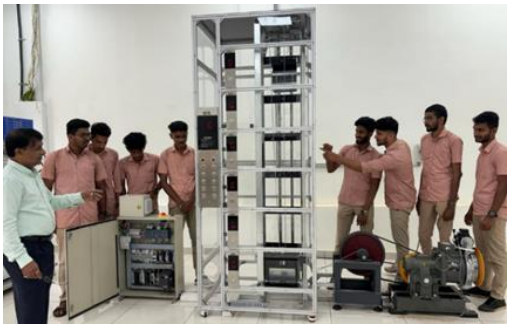
Learning Outcomes: After completing this short term training program, participants will be able to:

- Assemble the components of a drone including, flight controller and troubleshooting related issues.
- Simulate drone flight controls through software, also practice manoeuvring drones in various simulated environments such as open fields, obstacle courses, and indoor settings.
- Perform basic flight maneuver operations under the guidance of instructors.
- Understand regulations and guidelines governing drone operation, including airspace restrictions, flight altitude limits, and registration requirements.

Detailed Curriculum:

• MSDC overview • Introduction to Drone Components (frame, motors, propellers, flight controller, ESCs, battery, and radio transmitter/receiver), Safety Protocols and government regulations. • Practice on soldering, frame assembly and motor Installation and wiring. • Flight Controller, electronic speed controllers (ESCs) and motor calibration. • Propeller Attachment and Final Checks • Pre-flight checks and safety inspections.	Week 1 **Theory:** 2 hours **Practical:** 8 hours
• Introduction to drone simulation software. • Practice flying drones in various simulated environments (open fields, obstacle courses, indoor settings). • Simulation of emergency landing procedures and recovery techniques. • Flying practice in a controlled outdoor environment. • Performance review on flying and areas of improvement	Week 2 **Theory:** 2 hours **Practical:** 8 hours

4) School of Industrial Automation Skills: The school is equipped with automated systems such as Flexible Manufacturing System (FMS), Programmable Logic Controller (PLC) Trainer kit, PLC controlled bottling plant and Multi-story elevator, and IOT enabled Pneumatics & Hydraulic Systems to provide hands on training in industrial automation.



Sl No.	Programs Offered	Duration	Who can attend	Job Prospective
1	Internship / Industrial Training	4 Weeks (80 hrs)	Students pursuing Degree with Science and Engineering streams, Working Professionals	Industrial Automation Trainer / Industrial Maintenance Engineer
2	Internship / Industrial Training	16 weeks (640 hrs)	Students pursuing Degree with Science and Engineering streams, Working Professionals	Industrial Automation Trainer / PLC Programmer / Industrial Maintenance Engineer

1. Industrial Internship/Training on Industrial Automation

Learning Outcomes: After completing this industrial internship/training, participants will be able to:

- Build PLC schemes on personal computers.
- Write programs for Industry PLC ladder logic and function blocks.
- Testing the programs on Simulation and Hands on training.
- Work safely following health and safety standards: Understand the safety signs and instructions on the equipment, identify job–site hazards and follow safe habits to work in any manufacturing unit.

Detailed Curriculum:

• Introduction to Industrial Automation and equipments. • Mitsubishi PLC & control system -wiring diagrams, operation and interfacing (input/output). • PLC wiring Practice – Connections of different out puts like motors, lamps etc. • Practice on Mitsubishi PLC connections with different logics for various applications. • Testing PLC wiring and fault tracing using PLC software. • Health safety and environmental regulation at work place, safety signs and instructions associated with equipment/machines and operations. • Job site hazards - tools, revolving and moving parts and naked wires etc. • Use of fire extinguishers, safe working practices and good housekeeping practices to prevent accident at work place. • Project work - Write programs for industry PLC for a specific application and test the programs on Simulation. • Preparing report and presentation which include: organization profile and the training received from week 1- 4 including project work.	**Theory:** 20 hours **Practical:** 60 hours

5) Orane International School of Beauty and Wellness: School of Beauty and Wellness by Manipal Skill Development Center (MSDC) is an official franchisee of Orane International - School of Beauty & Wellness. All programs offered by MSDC are supported, evaluated and certified by Orane International. Orane international is a renowned and leading Beauty Institute for Cosmetology courses (which include Skin, Hair, Makeup & Nail Art) and a grade A accredited training partner of NSDC and BWSSC.



Sl. No.	Programs Offered	Duration	Sl. No.	Programs Offered	Duration
1.	Short Term Programs	2 weeks to 1 month	7.	Advance Diploma in Pro Hair Designing	5 months (240 hrs)
2.	Diploma in Mehndi Designing	4 weeks (44 hrs)	8.	Advance Diploma in Cosmetology	9 months (454hrs)
3.	Advance Diploma in Pro Makeup Artistry	3 weeks (120 hrs)	9.	Advance Diploma in Aesthetics & Hair Designing	12 months (640 hrs)
4.	Diploma in Nail Technician	4 months (196 hrs)	10.	Post-Graduate Diploma in Cosmetology	18 months (908 hrs)
5.	Diploma in Beauty Culture	4 months (205 hrs)	11.	Masters in Cosmetology	2 years (1466 hrs)
6.	Diploma in Professional Makeup	4 months (218 hrs)			

Who can attend: 10th /12th Pass or Fail / Working Professional / Anyone with a passion to learn

6) School of CNC skills: School is equipped with CNC Trainer Turning and Vertical Machining Centers (4 each) with Fanuc Controllers, for training in programming, simulation and operation of CNC machining centers to make the desired product.


Sl/ No.	Programs Offered	Duration	Who can attend	Job Prospective
1	Short Term Training Program	01 Week (20 hrs)	ITI / Diploma Students / Working Professional	CNC Machine Operator in Manufacturing Industries
2	Internship / Industrial Training	4 Weeks (100 hrs)	Students pursuing Diploma / Degree in Mechanical, Automobile, Printing and Mechatronics Engineering	CNC Programmer / Supervisor/ Product Development Engineer in Manufacturing Industries

1. Short Term Training Program

Learning Outcomes: After completing this internship program, participants will be able to:

- Carry out preparations for CNC machine for production: Select raw materials, suitable tools, work holding devices and cutting parameters as per job specifications.
- Understand the working of parts and features of CNC machines and control accessories.
- Test and run the program on CNC Machine: Load the part-program in CNC system, mount work piece and tools in correct positions, measuring and adjusting tool offsets and make a prototype.
- Work safely following health and safety standards: Read and understand the safety signs and instructions on the CNC machine, identify job–site hazards and apply good housekeeping practices etc.
- Independently operate the CNC turning and milling centers.

Detailed Curriculum:

- MSDC overview
- Obtain job specifications from component drawings/job card.
- Identify operations to be performed, select raw materials, suitable tools, work holding devices and cutting parameters.
- CNC machines – parts and accessories, features, working and controls, terminologies and syntax used in CNC programming, operations, tools and their motion commands.
- Understand the CNC program for parts of simple shapes for **turning and vertical milling centers.**
- Program simulation using desktop simulator – testing the working of part program.
- Test and run the program on the CNC turning and vertical milling centers – loading part-program, mount work piece and tools, measure and adjust tool offset and making prototype model.

2. Industrial Internship/Training on CNC Machines

Learning Outcomes: After completing this internship/training, participants will be able to:

- **Carry out preparations for Programming CNC machine for production:** Sequencing of operations to be performed as per component drawing. Select raw materials, suitable tools, work holding devices and cutting parameters as per job specifications including limits, tolerances and surface finish.
- **Carry out programming for CNC Turning and Vertical Machining centers:** Understand the working of parts and features of CNC machines and control accessories. Design CNC program as per component dimensions along with commands such as tool and spindle motions, misc. functions and tool change, corresponding to the machine and control systems.
- **Simulate the program using desktop simulator:** Using software, test the working of part program by simulating tool movements, check the errors and edit the program ensuring required shape is obtained.
- **Test and run the program on the CNC Machine:** Load the part-program in CNC system, mount work piece and tools in correct positions, measure tool offset and edit the program with offsets and make prototype.
- **Work safely following health and safety standards:** Read and understand the safety signs and instructions on the CNC machine, use of PPE, identify job–site hazards and apply good housekeeping practices etc.
- **Independently design a program for production of variety of components and operate the CNC turning and milling centers.**

Detailed Curriculum:

• MSDC overview, familiarization with other related skill centers. • Obtain job specifications (dimensions, limits, tolerances and surface finish) from component drawings/job card. • Identify the sequence of operations to be performed, select raw materials, suitable tools, work holding devices and cutting parameters. • CNC machines – parts and accessories their features, working and control. • Common terminologies and syntax used in CNC Programming, operations, tools and their motion commands. • Subprograms and canned cycles to make the program efficient. • Health safety and environmental regulation at work place, safety signs and instructions associated with equipment/machines and operations. • Job site hazards - sharp cutting tools, revolving and moving parts, hot metal particles, lifting of heavy work holding devices, burrs, fumes, naked wires etc. • Use of fire extinguishers, safe working practices and good housekeeping practices to prevent accident at work place and use of PPE.	Week 1 **Theory:** 15 hours **Practical:** 10 hours
On Job Training 1 (OJT 1): • Design CNC program for **turning center** as per component dimensions. • Program simulation using desktop simulator – testing the working of part program by simulating tool movements using software, check the errors and edit the program to get required shape. • Test and run the program on the CNC turning center – loading the part-program, mount work piece and tools in correct positions, measure tool offset and edit the program with offsets and making prototype model.	Week 2 **Theory:** 10 hours **Practical:** 15 hours

On Job Training 2 (OJT 2): • Design CNC program for **vertical machining center** as per component dimensions. • Program simulation using desktop simulator – testing the working of part program by simulating tool movements using software, check the errors and edit the program to get required shape. • Test and run the program on the CNC vertical machining center – loading the part-program, mount work piece and tools in correct positions, measure tool offset and edit the program with offsets and making prototype model.	Week 3 **Theory:** 10 hours **Practical:** 20 hours
Project work 1 – Making model on CNC turning center Project work 2 - Making model on CNC vertical machining center Preparing report that include: OJT received from week 1- 4 including project work 1 and 2.	Week 4 **Practical:** 25 hours

7) School of Woodworking skills: Woodworking workshop is equipped with state-of-the-art machines such as high precision Panel saw, Edge bander and Cold press imported from Italy, for providing hands on training in operation of woodworking machines and in making home and office furniture using plywood & particle boards.

Sl No.	Programs Offered	Duration	Who can attend	Job Prospective
1	Furniture making Training	4 weeks	8th Std. and above / ITI	Carpenter / Self-employment
2.	Entrepreneurship Development Programme in Wooden Furniture Making	12 weeks	8th Std. and above / ITI	Entrepreneur

1. Furniture Making Program

Learning Outcomes: After completing this training, participants will be able to:

- Identify, right material, select & use specified tools and equipment relevant to carpentry work.
- Carry out woodworking operations using machines: Sawing, panel trimming, banding and lamination.
- Assemble different parts of the furniture: Joining wooden parts as per the given lay out, right use of adhesives, fixtures etc. for making the final product.
- Work safely following health and safety standards: Understand the safety signs and instructions on the machines, identify job –site hazards, follow good housekeeping and safe working practices and use Personal Protective Equipment.
- Independently carryout making of home and office furniture using plywood and particle board.

Detailed Curriculum

1. Wood working Tools, Machines, Equipment and Operations. • Prepare sketches/ drawings as per the customer requirement. • Estimate material as per drawing, identify tools, equipment and consumables. • Understand the safety signs of machines, tools and instruments • Identify job–site hazards such as sharp cutting tools, revolving and moving parts, lifting of heavy panels, naked wires etc., and follow safe habits in workplace. • Use of fire extinguishers, safe working practices and good housekeeping practices to prevent accident at work place. **2. Woodworking Operations using hand tools and machines.** • Saw the work material (particle board/plywood) using appropriate tools / equipment/machines as per the specified measurements. • Lamination of plywood sheets as per the requirement of size and shape. • Banding the edges of work material manually using adhesives and using edge banding machine and trimming excess material. • Verify the cut components for its dimensions as per drawing specifications and ensure cutting components are arranged for the next stage of production.	Week 1 Theory: 5 hrs Practical: 20 hrs

3. Assembling the different parts of the furniture • Alignment and positioning the components according to the drawing and as required for the joining • Assemble the components using adhesive and furniture fittings ensuring correct fit. • Check for any misfits, alignments and snagging in the assembled parts/ scratches/ defects in furniture. • Check the quality of product in terms of measurements, accuracy, and rigidity, as per standard work practices. • Project work on 2 simple furniture models. • Preparing training report on job training received from week 1- 4 including project work.	Week 2 – 4 Theory: 10 hrs Practical: 65 hrs

2. **Entrepreneurship Development Program in Furniture Making**

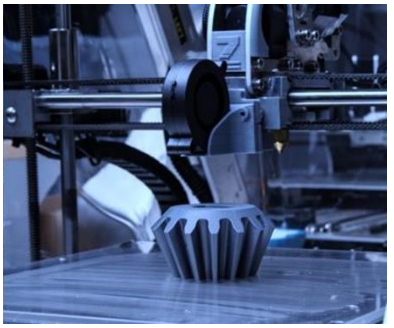
   Learning Outcomes: After completing this training, participants will be able to:

   - Identify, right kind of material, select & use specified tools and equipment relevant to carpentry works.
   - Carry out woodworking operations using machines: Sawing, trimming of panel according to the designs/ sketches, banding and lamination.
   - Carry out assembling of different parts of the furniture: Joining wooden parts as per the given lay out, right use of adhesives, fixtures etc. for making the final product.
   - Work safely following health and safety standards: Understand the safety signs and instructions on the machines, identify job –site hazards, apply good housekeeping practices, follow safe working practices.
   - Work effectively with others: Work effectively with stakeholder, adhering to the organizational rules and regulations.
   - Independently carryout making of home and office furniture using plywood and particle board.
   - Become an entrepreneur, establish the woodworking workshop and market the products.

Detailed Curriculum

1. Wood working Tools, Machines, Equipment and Operations. • Prepare sketches/ drawings as per the customer requirement. • Estimate material as per drawing, identify tools, equipment and consumables. • Understand the safety signs of machines, tools and instruments • Identify job–site hazards such as sharp cutting tools, revolving and moving parts, lifting of heavy panels, naked wires etc., and follow safe habits in workplace. • Use of fire extinguishers, safe working practices and good housekeeping practices to prevent accident at work place. **2. Woodworking Operations using hand tools and machines.** • Saw the work material (particle board/plywood) using appropriate tools / equipment/machines as per the specified measurements. • Lamination of plywood sheets as per the requirement of size and shape. • Banding the edges of work material manually using adhesives and using edge banding machine and trimming excess material. • Verify the cut components for its dimensions as per drawing specifications and ensure cutting components are arranged for the next stage of production.	Week 1 - 5 Theory: 25 hrs Practical: 100 hrs
3. Assembling different parts of the furniture • Alignment and positioning the components according to drawing and as required for the joining • Assemble the components using adhesive and furniture fittings ensuring correct fit. • Check for any misfits, alignments and snagging in the assembled parts/ scratches/ defects in furniture. • Check the quality of product in terms of measurements, accuracy, and rigidity, as per standard work practices. • Project work on two simple furniture models.	Week 6 - 10 Theory: 10 hrs Practical: 115 hrs
3. Entrepreneurship Skills - Requirements for starting a business in Furniture/Kitchen cabinets • Customer Segmentation and Estimation of Market Size for wooden furniture. • Business Plan • Location Identification • Financial Projections: Project Cost Estimation (Land, building, machinery, tools, materials, and miscellaneous costs), working capital, and revenue forecast. • Break Even Analysis • Sources of Financing • Marketing and Sales: How to develop a marketing plan, create sales, and reach target market. • Project Report • Legal Considerations for business: Legal basics of starting a business, such as choosing a business structure, registering business, and obtaining necessary licenses and permits. • Preparing training report on job training received from week 1 – 12 and Project report.	Week 11 – 12 Theory: 25 hrs Practical: 25 hrs

8) School of 3D Printing Skills: 3D printing or additive manufacturing is the building a three-dimensional object, generally of plastic, from a CAD/digital 3D model. School is equipped with 7 state of the art 3D printers (collaboration with Fracktal works, Bangalore) and a 3D scanner to impart hands on training in 3D modelling and printing.



Sl No.	Programs Offered	Duration	Who can attend	Job Prospective
1	Short Term Training Program	1 Week (18 hrs)	SSLC / Diploma / ITI / PUC	3D Printing Operator /Technician
2	Skill Advancement Program	2 Weeks (30 hrs)	SSLC / Diploma / ITI / PUC	3D Printing Operator / Technician

1. Short Term Training Program (1 week)

Learning Outcomes: After completing this training, participants will be able to:

- Utilize basic 3D modeling software to create simple machine parts.
- Utilize slicer software to prepare 3D models for printing.
- Operate a 3D printer safely and efficiently.
- Use 3D scanner to capture data from existing objects.

Detailed Curriculum:

- Introduction to 3D printing technology and its applications.
- 3D printer - components, functionalities and safety protocols.
- Workflow of 3D printing: modeling, slicing, printing, and post-processing
- Hands-on practice: CAD software for 3D modeling of mechanical components
- Hands-on Tutorials on model preparation for printing.
- Slicing software: Functionalities, defining print parameters (infill density, layer thickness), and generating G-code for printing.
- Guided practice on machine calibration, loading printer filaments.
- Operation of 3D Printing machine for printing of developed models.
- 3D scanner operation and data acquisition (Hands-on Training)

2. Skill Advancement Program (2 weeks)

Learning Outcomes: After completing this training, participants will be able to:

- Develop 3D model using CAD software.
- Operate slicer software effectively to prepare 3D models for printing.
- Calibrate a 3D printer for optimal printing performance.
- Operate a 3D printer safely and efficiently.
- Utilize a 3D scanner to capture data from existing objects.

Detailed Curriculum:

- Introduction to 3D printing technology and its applications
- Workflow of 3D printing: modelling, slicing, printing, and post-processing
- 3D Printing Materials & Selection.
- Design considerations for creating models suitable for successful 3D printing.
- Hands-on practice on designing of 3D model using CAD software.
- Slicing software: Introduction, functionalities, defining print parameters (infill density, layer thickness), and generating G-code for printing.
- Understand Printing & Post-Processing Techniques.
- Hands-on practice on calibration and operation of 3D printer.
- Operation of 3D Scanner & Data Acquisition.
- Project work.

9) School of IT skills: School is equipped with high end desktops, software and qualified faculty for imparting hands on training in latest IT skills such as Artificial intelligence (AI), Cyber-security, Cloud computing, Software development, User interface (UI), User experience (UX) design, Data analytics and Data science.

Sl/ No.	Programs Offered	Duration	Who can attend	Job Prospective
1	Data Visualisation using Power Business Intelligence (BI)	60 hrs (2 hrs/day)	Diploma/Graduate Students / Working Professional	Sales and Marketing Analyst / BI Analyst /BI Developer / BI Solution Architect Data Analyst / Data engineer / Financial Consultant
2	Full Stack Application Development	16 weeks (2 days/ Week)	Diploma/ Graduate Students / Working Professional	Full stack Django/Python Web Developer, Software Analyst, Software Engineer, Systems Engineer, Programmer, Programmer Analyst
3	Advanced Excel with VBA (Macro) Programming	60 hrs (2 hrs/day)	12th / Diploma/ Graduate Students / Working Professional	Business Intelligence Analyst / Financial Analyst / Operations Analyst / Supply Chain Analyst / Marketing Analyst /HR Analyst / Consultant
4	Office Automation using AI Tools, ChatGPT	35 hrs (2 hrs/day)	10th /12th / Diploma / Graduate Students / Working Professional	Administrative Assistant/Secretary/Data Entry Operator/Customer Service Representative/Human Resources Manager/Marketing/Sales Manager
5	Python Programming	90 hrs (3 hrs/day)	10th /12th / Diploma / Graduate Students / Working Professional	Software Developer / Application Developer / Game Developer / Web developer / UI-UX programmer

Detailed Curriculum:

1. **Data Visualisation using Power Business Intelligence (BI)**	**Duration**
• Understand Data Visualization Principles • Proficiency in Power BI • Data Preparation and Transformation and Modelling • Advanced Visualization Techniques • Interactive Reports and Dashboards. • Data Analysis and Insights Generation • Best Practices and Optimization • Project-Based Learning • **Employability skills –** Resume and Report writing, Presentation, Communication & Preparing for Interview	**Theory: 15 Hrs** **Practical: 45 hrs**

3. **Full Stack Application Development**	**Duration**
• Programming Languages: Python, JavaScript • Web Technologies and framework: HTML 5, CSS, Bootstrap, Django, DTL, jQuery, Ajax, • Databases: SQLite, PostgreSQL • Cloud computing, Amazon Cloud (AWS): IAM, Route 53, Light Sail, Cloud Front, S3, RDS, EC2, Boto3 library. • Software Development Lifecycle (SDLC) (OOD, Agile) • Website hosting and Web server configuration: Apache (virtual host, SSL certificates) and web site deployment on Ubuntu Linux virtual server (AWS), IIS on Windows • Operating System: Ubuntu Linux, Windows. • IDE: VS Code/Visual Studio/PyCharm/Sublime Text • Tools/Technologies/Methodologies: Git, Git hub, Razor Pay payment gateway, MS Office, AI tools like ChatGPT from OPEN AI, Gamma App, etc • **Employability skills –** Resume and Report writing, Presentation, Communication & Preparing for Interview	**2 days/ Week** **Theory and Practical: 3 hrs/day**

4. **Advanced Excel with VBA (Macro) Programming**	**Duration**

• Introduction and Basic Formula, Functions
• Financial Functions
• Data Analysis - Statistical and Scenario Analysis
• Charting and Visualization
• PivotTables
• **VBA Macro Programming**:
  ○ Introduction, need for VBA Macros and application of VBA Macros.
  ○ Benefits and limitations of VBA Macros
  ○ Defining Variables to Macro.
  ○ Loops and Worksheet Ranges:
  ○ Formulae in VBA and Error Handling:
  ○ Financial Analysis
• Data Security and Efficiency Tips
• **Employability skills –** Resume and Report writing, Presentation, Communication & Preparing for Interview
	Theory: 10 Hrs
	Practical: 50 hrs

5. **Office Automation using AI Tools and ChatGPT**	**Duration**
• Proficiency in Microsoft Office Suite. • Understand AI Tools Integration. • Data Analysis and Insights Generation. • Document Design and Presentation Enhancement. • Collaborative Document Review and Editing. • **Employability skills –** Resume and Report writing, Presentation, Communication & Preparing for Interview	**Theory: 5 hrs** **Practical: 30 hrs**

5. Python Programming	**Duration**
• Understand Python Basic Concepts and Syntax. • Proficiency in Python Fundamentals. • Data Structures and Algorithms. • Object-Oriented Programming (OOP). • File Handling and Input/Output Operations. • Error Handling and Exception Handling. • Working with Modules and Libraries. • Application Development. • Problem Solving and Algorithmic Thinking. • **Employability skills –** Resume and Report writing, Presentation, Communication & Preparing for Interview	**Theory: 25 hrs** **Practical: 65 hrs**

10) School of Refrigeration and Air-conditioning: School is equipped with Air cooled Chillers, Package and Window air conditioners, Cassette and VRV air conditioners, Cold room and Deep freezer for providing hands on training in installation, maintenance and servicing of Heating, Ventilation and air conditioning systems for all types of applications.

Sl/ No.	Programs Offered	Duration	Who can attend	Job Prospective
1.	Internship/ Training program	4 Weeks (100 hrs)	Students of Diploma / Engineering / Degree with science steams, Working Professional	Air-conditioning Sales and Service Engineer/ Supervisor in Manufacturing and Service Industries

1. Internship/Training program on Refrigeration and Air-conditioning

Learning Outcomes: After completing this program, participants will be able to:

- Understand the concepts of refrigeration and air conditioning, type of HVAC systems and components.
- Perform brazing of copper tubes, ducting in air conditioning systems, and leak testing and gas charging.
- Install different types of the refrigeration and air conditioning systems, fault finding and their servicing.
- Work safely following health and safety standards: Understand the safety rules, Government byelaws and environmental protection regulations, identify job–site hazards and follow safe habits in workplace.

Detailed Curriculum:

• MSDC overview, familiarization with other related skill centers. • Introduction to refrigeration, psychrometry and air conditioning, types of HVAC systems and refrigerants. • Components of AC systems such as compressor, condenser, evaporator, and refrigerant controls and understand their working principle.	Week 1 Theory: 20 hrs Practical: 5 hrs
• Sheet metal working and brazing related to refrigeration and air conditioning systems, gas charging, leak testing, diagnosis & remedial measures in Refrigerator (Direct cool), Frost-free refrigerator and Inverter technology Refrigerator.	Week 2 Theory: 10 hrs Practical:15 hrs
• Installation and commissioning of window AC, split A.C, Inverter split A.C, package A.C and VRF / VRV systems. • Testing, fault finding and servicing of all HVAC system components such as blowers & fans, insulation of ducts, cleaning and fixing of air filters. • Mini project work/ Industrial visit/ In plant training at the end of training program. • Understand the safety rules of equipment, tools and instrument, Government byelaws and environmental protection regulations, identify job–site hazards and follow safe habits in workplace. • Preparing internship/training report and presentation which include: On job training received from week 1- 4 including project work.	Week 3 -4 Theory: 15 hrs Practical: 35 hrs

11) School of Fashion and Interior Design:

In collaboration with Dream Zone, & CADD center, Chennai, the school is equipped with state-of-the-art facilities for providing hands on training in 3D Modelling, Simulation and Virtual reality, used in Fashion and Interior design.

Sl No.	Programs Offered	Duration	Who can attend	Job Prospective
1	Master's Diploma in Interior Architecture and Design	40 Weeks (480 hrs)	Diploma / Engineering / Architecture / Interior Design / Degree college students, Working Professional	3D Modeller/ Architectural Designer/ Interior Designer / Product Designer/ Visualization Designer

2	Diploma in Interior Architecture Design	260 Hours	Interior Design Students, working professionals, Others interested in interior design	Interior Design
3	Diploma in IAD Grafx (max/Sketchup)	200 Hours	Interior Design Students, Working professionals, Others interested in interior design	Interior Design
4	Master Diploma in Fashion Design (RP + Illustrator)	600 Hours	Fashion Design Students/ Working professionals/ Beginners/Hobbyists/ Anyone interested in garment making	Fashion Design/ Entrepreneur/ Costume designer/ Garment Design
5	Professional in Fashion Design	360 Hours		
6	Professional in Garment Styling (Richpeace)	200 Hours		
7	Certificate course on Dress Making	104 Hours		

1. Master's Diploma in Interior Architecture and Design

Learning Outcomes: After completing this course the graduates will be able to:

- Plan and execute interior design projects across various contexts and scales.
- Design and modeling of 3D objects using CAD software.
- Apply the principles of spatial planning, ergonomics and human factors, in creating interior environments to enhance user experience and well-being.
- Implement sustainable design principles, green building practices, and environmental regulations in interior architecture and design projects.
- Understand professional ethics, codes of conduct, and legal responsibilities governing the practice of interior architecture and design.
- Present a comprehensive portfolio showcasing a range of design projects demonstrating creativity, innovation, and expertise.

Detailed Curriculum:

• Introduction and scope of Interior Design.
• Design and drawing of following topics using traditional means and CAD software.
  ○ Lettering, Forms, Shapes, Texture and Light
  ○ Dimensioning – Types and notation of dimensioning of geometrical drawing (Lines, Angles, Circles)
  ○ Units of Measurement - Metric Scales, Feet and inches scale
  ○ Design Principles, spatial planning and human dimensions.
  ○ Colour - Terminology, Colour wheel, Colour theory, Psychology
  ○ Freehand drawing of simple objects.
  ○ Orthographic projections – Plan, Elevation and Sectional views of complex objects.
  ○ Isometric views of furniture and related interior objects.
  ○ House plan - Draw a wall cross-section
• Building materials – types and their properties used in brick masonry.
• Tiles, Cement, Concrete, Paints, Wood, Glass, Metals, Gypsum – types, properties, and uses
• Carpentry - different Joints and uses, Bricks bonds and types
• Design and draw structural components such as window, door, walls, ceiling, arches, lintels, floors, Staircase using CAD software.
	40 Weeks: Theory/ Practical: 480 hours

12) School of PCB Design and Prototyping: School is equipped with CNC PCB Prototyping Machine, Surface Mounting Technology (SMT), Conveyor Reflow Oven, V-grooving Machine, Roller tinning, UV exposure unit and shearing machine for imparting hands on training in Design & fabrication of Printed Circuit Boards (PCB).

Sl No.	Programs Offered	Duration	Who can attend	Job Prospective
1	Workshop on PCB Fabrication Process	03 Days (12hrs)	Students of ITI / Diploma / Engineering/ Degree (Science)	PCB Fabrication Operator in PCB Manufacturing industries
2	Short Term Training Program on PCB Fabrication and Component Assembly	1week (20hrs)	Students of ITI / Diploma / Engineering/ Degree (Science)	PCB fabrication operator / supervisor / Maintenance Engineer in PCB Manufacturing Industries.
3	Short Term Training Program in PCB Design and Fabrication	2 Week (40hrs)	Students of ITI / Diploma / Engineering/ Degree (Science)	PCB fabrication Supervisor / Trainer/Design Engineer in PCB Manufacturing Industries.

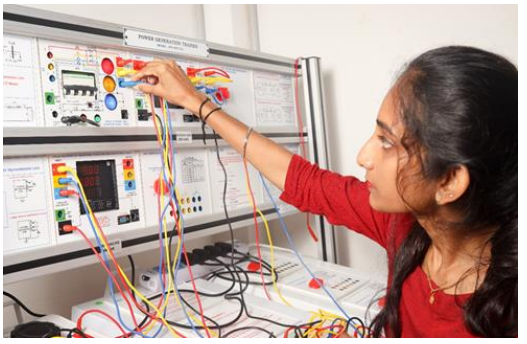
1. **Workshop on PCB Fabrication Process (3 days)**
   Learning Outcomes: After completing this training program, participants will be able to:
   - Understand the operation of CNC machine which include engraving and milling.
   - PCB etching, solder masking and tinning process.
   - Understand the technique of components assembly.

2. **Short Term Training Program on PCB Fabrication and Component Assembly (1 Week)**
   Learning Outcomes: After completing this short term training, participants will be able to:
   - Operate CNC machine for engraving and milling the PCB board as per circuit design.
   - PCB masking process using solder mask techniques.
   - Practice component assembly on Surface mounting technology and conveyor reflow machines.

3. **Short Term Training Program in PCB Design and Fabrication (2 Weeks):**
   Learning Outcomes: After completing this short term training, participants will be able to:
   - Design a PCB using KI-CAD and FLAT CAM software.
   - Operate CNC machine for engraving and milling the PCB board as per circuit design.
   - PCB masking process using solder mask techniques.
   - Practice component assembly on Surface mounting technology and conveyor reflow machines.

13) School of Power and Energy systems: School is Equipped with electrical equipment having power electronics, solar power systems, electromechanical systems, miniature circuit breakers (MCB), protection systems and AC power transmission systems for providing hands on training in

- Wiring of Domestic and Industrial Electrical equipment
- Identify problems and repair of electrical equipment, Power distribution and Protections systems.



Sl No.	Programs Offered	Duration	Who can attend	Job Prospective
1	Short Term Training Program	1 week (20hrs)	10th Std / Students of ITI / Diploma	Electrician / Foreman

14) School of Animation Technology: In collaboration with Da Vinci International Institute of Design, Mangalore, the school offers training programs in:

- 3D Animation (1 / 2 Years)
- Web Design and Development (1 Year)
- Gaming Design (1 Year)
- Video Editing Plus (6 Months)

Visual Effects (1 / 2 Years)
Interior Design (1 Year)
Graphic Design (6 Months)

15) School of Electric Vehicle skills: School is equipped with working models of Electrical four wheeler retro, two wheeler bike and scooter, E-cycle, Lithium Ion Battery Pack, Permanent Magnet Synchronous Motor (PMSM), BLDC Motor, power electronic converters, accelerators and controllers, wiring harness for all types of Electric Vehicles. School offers hands on training programs in retrofitting, design, assembly & maintenance of battery pack for various types of electric vehicles.

16) School of Automotive Skills: Automobile Service Station is furnished with following equipment to provide hands on training in servicing of vehicles for the job role of Automotive Service Supervisor/ Technician.

- Two Post Lift
- AC gas charger
- 3D Wheel Aligner
- Paint Booth
- Wheel Balancer
- MIG Welding Machine
- Tyre Changer
- Dent Puller

Sl No.	Programs Offered	Duration	Who can attend	Job Prospective
1	Short Term Training Program on Car Wheel Care	1 week (20hrs)	10th Std / Students of ITI / Diploma	Wheel Care Technician
2.	Short Term Training Program on Car AC Servicing	1 week (20hrs)	10th Std / Students of ITI / Diploma	AC Service Technician

17) School of Drone Remote Pilot Training skills: The school is a Remote Pilot Training Organization (RPTO) approved by Director General of Civil Aviation (DGCA), Govt. of India, for imparting hands on training to the individuals to become a commercial drone pilot. The school is equipped with a fleet of drones, flight simulator bays and DGCA certified faculty for offering training in assembling, flying, repair & maintenance of drones as per DGCA regulations and standards.

Drone Pilot Training certificate is mandatory to fly ANY DRONE above the weight of 250 gms in India.

Upon successful assessment of training program, the participants will be awarded with Drone Remote Pilot Training Certificate (RPC) by DGCA.

Sl No.	Programs Offered	Duration	Who can attend	Job Prospective
1	Remote Pilot Training Certificate Program	01 Week	Normal literacy of reading, writing and understanding with age restriction of above 18 years.	Commercial Drone Pilot

18) School of Computer Aided Design and Drafting Skills: In collaboration with CADD center, Chennai, the school is equipped with state-of-the-art facilities for providing hands on training in 3D Modelling, Simulation and Virtual reality used in mechanical, civil and architectural designs.

Sl No.	Programs Offered	Duration
1	Essential in Revit Architecture	40 Hours
2	Proficient in Revit Architecture	80 Hours
3	Essential in Revit Structure	40 Hours
4	Essential in Revit MEP	40 Hours
5	Proficient in Revit MEP	80 Hours
6	Essential in AutoCAD	40 Hours
7	Proficient in AutoCAD	80 Hours

Sl No.	Programs Offered	Duration
8	Essential in BIM for Architects	40 Hours
9	Proficient in BIM	80 Hours
10	Essential in SketchUp	40 Hours
11	Proficient in SketchUp	80 Hours
12	3D Visualization using Real time Rendering	20 Hours
13	Virtual Reality applications in Construction industry (Architectural Visualization)	40 Hours

Who can attend: Diploma / Engineering / Architecture / Interior Design / Degree college students, Working Professional

Job Prospective: 3D Modeller/ Architectural Designer/ Interior Designer / Product Designer/ Visualization Designer

MoU between MSDC and Universities / Institutions

1.	Manipal Academy of Higher Education (MAHE), Manipal
2.	Orane International School of Beauty and Wellness, Chandigarh
3.	CADD Centre Training Services, Chennai
4.	Sursagar Foundation (da Vinci International Institute of Design), Mangalore
5.	Dlithe Consultancy Services, Bengaluru
6.	Aviocian Technologies, New Delhi
7.	Dr.B.B. Hegde First Grade college, Kundapura
8.	Shirdi Sai Degree College, Karkala
9.	MindPhoenix Advisory Services, Bengaluru
10.	Vijaya First Grade College, Mulky
11.	Sri Bhuvanendra College, Karkala
12.	Shri Madhwa Vadiraja Institute of Technology and Management

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For more details, please visit: www.msdcskills.org

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