

GOVERNMENT OF INDIA
MINISTRY OF SKILL DEVELOPMENT & ENTREPRENEURSHIP
DIRECTORATE OF GENERAL OF TRAINING

भारत सरकार
कौशल विकास और उद्यमिता मंत्रालय
प्रशिक्षण महानिदेशालय

இந்திய அரசு
திறன் மேம்பாட்டு மற்றும் தொழில் முனைவோர் அமைச்சகம்
பயிற்சி இயக்குநரகம்

**TRAINING
BROCHURE
2022 - 2023**

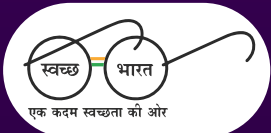
NATIONAL SKILL TRAINING INSTITUTE
CTI Campus, Guindy, Chennai - 600032.

राष्ट्रीय कौशल प्रशिक्षण संस्थान
सी टी आई कैम्पस, गिन्डी चेन्नई - 600 032

தேசிய திறன் தொழிற்பயிற்சி நிலையம்
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UPDATE SKILL AND STAY EMPLOYED
ACQUIRE SKILL AND GET EMPLOYED





SKILLS EMPOWERING THE NEW INDIA

“Let’s pledge to make India the Skill Capital of the World.”
Shri. Narendra Modi
Hon’ble Prime Minister





ABOUT DGT

The Directorate General of Training (DGT) in Ministry of Skill Development and Entrepreneurship is the apex organisation for development and coordination at National level for the programmes relating to vocational training including Women’s Vocational Training. Industrial Training Institutes are under the administrative and financial control of State Governments or Union Territory Administrations. DGT also operates Vocational Training Schemes in some of the specialized areas through field institutes under its direct control. Development of these programmes at national level, particularly in the area concerning common policies, common standards and procedures, training of instructors and trade testing are the responsibility of the DGT. But, day-to-day administration of Industrial Training Institutes rests with the State Governments/ Union Territories Administrations.

ABOUT NSTI CHENNAI

NATIONAL SKILL TRAINING INSTITUTE, Chennai was established in 1968 under the aegis of (erstwhile DGE&T, Ministry of Labour) Directorate General Training (DGT), Ministry of Skill Development and Entrepreneurship, Government of India, New Delhi to impart training and updating the skills of Engineers / Supervisors / Technicians / Executives of Industrial Personnel & Faculties of Educational Institutions through various Courses of short duration and Tailor made courses as per the specific needs of their Industries / Govt Estt. / PSUs / Technical Institutions. The courses are conducted for higher skill upgradation through intensive skill-oriented training by using the latest version of equipment and machinery used in industry.

VISION

To provide innovative, effective and integrated training opportunities for people who need new skills to enjoy the dignity that comes with employment, independence and self-reliance.

MISSION

- To continuously hone the skills of industrial workforce for higher productivity
- Bridging the gap between academics and industries for suitable placement for young generation in technical fields.

QUALITY POLICY

- Committing to a structured Quality Program that satisfies the requirements of industry needs.
- Committing to provide Quality Training and related services to the trainees;
- Involving industry in both the Development and Evolution of our training programs and courses ensuring that standards are maintained and improved by active monitoring, reviewing and improving all activities



“It is not that just 10 per cent of India’s population is skilled. The biggest challenge is to put our record straight on the table.”

Shri. Dharmendra Pradhan
Hon’ble Union Minister for Skill Development and Entrepreneurship



ELIGIBILITY CRITERIA

FOR REGULAR COURSES

1. Pass in engineering degree/Diploma/NAC/NTC/Graduate in science with chemistry as a subject for industrial chemistry courses.
2. Qualification can be relaxable for industrially sponsored candidates having Industrial Experience.
3. Pre-Final/Final year students of the Polytechnic/Engineering College/Arts and science Colleges.

FOR TAILOR MADE COURSES

Fully at the discretion of the client preferably with related Experience. Qualification can be relaxed in deserving cases.

Issue of Competency/Proficiency certificates

The candidates who successfully completed the programme by fulfilling requirements & on attaining the competency & proficiency in knowledge & skill are awarded merit certificates by the competent authority of this institute/Department.

AVTS - ADVANCED VOCATIONAL TRAINING SCHEME

- Short-term course of 2-4 weeks duration in engineering areas are envisaged / being implemented in the NSTIs.
- Special Course duration can be extended up to 12 weeks also.
- Courses on skill upgradation / enhancement can also be arranged in basic engineering orientation and foundation in core engineering disciplines in viz., fitting, carpentry, plumbing, electrical and electronics sector.
- The said programme will benefit Engineering / ITI / Polytechnic students and also serving industrial personnel in order to get acquaintance of basic engineering skill and practice

FEE STRUCTURE

Courses	Category	Tuition Fees per Trainee per week
Regular/Advanced level courses (Period upto 12 Weeks)	Candidates sponsored from Medium and large scale Industries in both Public and Private sector.	Rs. 2000/-
	Candidates sponsored from Small Industries and Private candidates	Rs. 1000/-
	Candidates nominated by Government Departments like Railways, Defence etc.	Rs. 1250/-
	Candidates sponsored from Educational Institute like Polytechnic / Engg.college & other related Technical Institutions etc.	Rs. 1000/-
Tailor made Courses/ Special advanced Level Courses	Candidates sponsored from Medium and large scale Industries in both Public and Private sector.	Rs. 4000/-
	Candidates nominated by Government Departments like Railways, Defence etc.	Rs. 2500/-
	Candidates sponsored from Educational Institute like Polytechnic / Engg.college & other related Technical Institutions etc.	Rs. 2000/-

Code	Category	Fees
A	Application Cum Registration fees	Application cum Registration Fees of Rs.100/- should be made by the way of crossed DD in favour of "DDO, RDSDE-TAMILNADU CHENNAI -600032" payable at Chennai only.
B	Hostel Rent fees	Rs.100/- per day per participant at the time of admission in case Hostel Accommodation is Required.
C	Gymkhana Fees	Rs.10/- per Course for Regular/Advanced level Courses and Rs.15/- per course for the tailor made courses (TMC)

ELECTRICAL CONTROL MAINTENANCE (ELM)

Name of the Course	Course Code	Course Duration	Course Schedules		
			Jul 2022 – Sep 2022	Oct 2022 - Dec 2022	Jan 2023 - Mar 2023
BASIC COURSE ON LV SWITCHGEAR WITH SIEMEN'S KIT	22101	1 week	01-08-2022 to 05-08-2022	10-10-2022 to 14-10-2022 31-10-2022 to 04-11-2022 28-11-2022 to 02-12-2022 26-12-2022 to 30-12-2022	06-02-2023 to 10-02-2023 13-03-2023 to 17-03-2023
Course Contents	Faults, causes, effects protective zones, primary & back up protection, desirable qualities of protective relays construction, working principle, operation, characteristics, settings, calibration & applications of electromechanical relays static relays numerical relays microprocessor based relays protection of motors protection of transformers protection of generators circuit breakers: construction, working principle, arc extinction / quenching, operation, installation, maintenance & servicing of air circuit breakers air blast circuit breaker minimum oil & bulk oil circuit breaker vacuum circuit breaker sf6 circuit breaker switch gears: types, requirements construction, layout, operation & maintenance operation, setting, tripping, resetting, testing, calibration & finding characteristics of electromechanical relays static relays numerical relays microprocessor based relays operation, trouble shooting, testing, servicing & maintenance of air circuit breakers air blast circuit breaker minimum oil & bulk oil circuit breaker vacuum circuit breaker sf6 circuit breaker operation & maintenance of switchgears.				
OPERATION AND MAINTENANCE OF POWER TRANSFORMERS	22102	1 week	12-09-2022 to 16-09-2022	17-10-2022 to 21-10-2022 14-11-2022 to 18-11-2022 05-12-2022 to 09-12-2022	02-01-2023 to 06-01-2023 13-02-2023 to 17-02-2023 20-03-2023 to 24-03-2023
Course Contents	Introduction to maintenance & types of motors, maintenance of motors, maintenance of switch gears, electrical power supply problems, power factor & its improvement energy conservation, earthing, construction of power transformers & their types, losses in transformers & efficiency, vector grouping of transformers, instrument transformers maintenance of transformers, electrical safety, familiarization of test & measuring instruments & equipment, measurement of resistance & insulation resistance of motors, identification of motor terminals, motor starter circuits, trouble shooting in motors & starter circuits, polarity test on transformers, OC&SC test on transformer, voltage regulation of transformer, efficiency of transformer, connecting 3 single phase transformers for 3 phase configurations, testing of transformer oil, CT & PT connection				
BASIC COURSE ON AC/DC DRIVES WITH SIEMEN'S SIMOREG DC MASTER 6RA70	22103	1 week	22-08-2022 to 26-08-2022 19-09-2022 to 23-09-2022	12-12-2022 to 16-12-2022	16-01-2023 to 20-01-2023 20-02-2023 to 24-02-2023 27-03-2023 to 31-03-2023
Course Contents	Introduction to maintenance & types of motors, maintenance of motors maintenance of switch gears electrical power supply problems. Power factor & its improvement, energy conservation earthing's construction of power transformers & their type's losses in transformers & efficiency vector grouping of transformers instrument transformers maintenance of transformers electrical safety. Familiarization of test & measuring instruments & equipment's measurement of resistance & insulation resistance of motors, identification of motor terminals motor starter circuits trouble shooting in motors & starter circuits polarity test on transformers OC & SC test on transformer. Voltage regulation of transformer, efficiency of transformer connecting 3 single phase transformers for 3 phase configurations testing of transformer oil CT & PT connection				
IMPORTANCE & APPLICATION OF ELECTRICAL SAFETY AT WORKPLACE & FIRST AID	22104	1 week	26-09-2022 to 30-09-2022	07-11-2022 to 11-11-2022 19-12-2022 to 23-12-2022	30-01-2023 to 03-02-2023 27-02-2023 to 03-03-2023
Course Contents	Introduction to electrical safety electrical hazards electric shock- definition, cause, severity of shock, protection against shock, preventive measures earthing - types burns - types, causes electric fires - causes, prevention, firefighting safety in maintenance Indian electricity act & rules first aid case studies measurement of insulation resistance & winding resistance high voltage test on motors measurement of earth resistance demonstration & practice of safe working methods demonstration practice of using tools, meters safely firefighting demonstration & practice of first aid.				

ELECTRONIC CONTROL MAINTENANCE (ECM)

Name of the Course	Course Code	Course Duration	Course Schedules		
			Jul 2022 – Sep 2022	Oct 2022 - Dec 2022	Jan 2023 - Mar 2023
8051 PROGRAMMING AND APPLICATIONS	22201	1 week	05-09-2022 to 09-09-2022	10-10-2022 to 14-10-2022 21-11-2022 to 25-11-2022	02-01-2023 to 06-01-2023 06-02-2023 to 10-02-2023 13-03-2023 to 17-03-2023
Course Contents	Introduction to micro controllers & advantage over microprocessors 8051 chip architecture, special features, on-board functions of the trainer unit modes of addressing and instruction set memory organization of 8051 i/o ports programming for simple operations using embedded c peripheral devices & interfacing programming for simple applications using LEDs, switches, relays, 7-seg display, LCD, stepper motor etc. serial communication- UART introduction to analog applications- ADC & DAC study of 8051 embedded controller trainer kit. embedded c programming practice for addressing of different ports embedded c programming practice for simple operations programming the chip for interfacing with peripherals programming practice for simple applications using LEDs, switches, relays, 7 segment display, stepper motor, traffic light control, UART, timers, ADC & DAC for analog control				
PIC MICROCONTROLLER PROGRAMMING AND APPLICATIONS	22202	1 week	01-08-2022 to 05-08-2022	17-10-2022 to 21-10-2022 14-11-2022 to 18-11-2022 28-11-2022 to 02-12-2022 26-12-2022 to 30-12-2022	09-01-2023 to 13-01-2023 13-02-2023 to 17-02-2023 20-03-2023 to 24-03-2023
Course Contents	Introduction to embedded controllers & advantage over microprocessors pic16f877a chip architecture, special features, on-board functions of the trainer unit and instruction set memory organization of pic16f877a classification of registers & i/o ports & modes of addressing programming for simple operations using embedded c peripheral devices & interfacing programming for simple applications using led, switches, relays, 7-seg display, stepper motor etc. serial communication- UART, i2c, can, USB, SPI etc. introduction to analog applications- ADC & DAC practical study of pic 16f877a embedded controller trainer embedded c programming practice for addressing of different registers embedded c programming practice for simple operations programming the chip for interfacing with peripherals programming practice for simple applications using led, switches, relays, 7 segment display, stepper motor, UART, timers, i2c, etc, ADC & DAC for analog control.				
COMPUTER HARDWARE MAINTENANCE AND NETWORKING	22203	1 week	26-09-2022 to 30-09-2022	12-12-2022 to 16-12-2022	30-01-2023 to 03-02-2023 27-02-2023 to 03-03-2023
Course Contents	Introduction to computer, classification of generation, explain and working principle of each part of computer types of processors and their specification, semiconductor memories and software OS, types of i/o devices and ports on a standard pc for connecting i/o devices. Technique of crimping and cable test introduction to computer networks, types of network LAN, WAN, application show the all-front panel computer part and explain r dos commands and windows identify various parts of computer and check the SMPS supply voltage. installation of OS, how to backup data, identify different section of mother board familiarization with various network devices, connectors and cables, ping an IP config and crimping rj-45 LAN cable, data transfer by using LAN network.				
SIEMENS S7400 PLC PROGRAMMING (TIA PORTAL)	22204	1 week	22-08-2022 to 26-08-2022 19-09-2022 to 23-09-2022	05-12-2022 to 09-12-2022 19-12-2022 to 23-12-2022	16-01-2023 to 20-01-2023 20-02-2023 to 24-02-2023 27-03-2023 to 31-03-2023
Course Contents	Introduction to Programmable Logic Controllers and automation, System overview, communication, processor fundamentals, Hardware configuration of Siemens S7400 PLC, Relay function I/O Configuration and Addressing, programming Fundamentals, bit commands and Latch instructions, Editing Logic, Timers and Counters Comparison instructions, Math instruction, Program control, Move and Logical instructions.				

PROCESS CONTROL INSTRUMENTATION (PCI)

Name of the Course	Course Code	Course Duration	Course Schedules		
			Jul 2022 – Sep 2022	Oct 2022 - Dec 2022	Jan 2023 - Mar 2023
ALLAN BRADLEY PLC PROGRAMMING & MAINTENANCE (AB SLC-500)	22301	1 week		07-11-2022 to 11-11-2022	30-01-2023 to 03-02-2023
Course Contents	Plc hardware and software aspects, Allen Bradley compact logics configuration, programming using RS logics 5000, developing ladder diagrams using different instructions like timers, counters, add, compare, equal to, greater than etc., panel view, variable frequency drives, interfacing real time application trainers to plc like water level control, traffic lights control, material handling system, bottle filling system.				
DO IT YOURSELF (DIY) - BUILD YOUR OWN FIREWALL	22302	1 week	26-09-2022 to 30-09-2022	12-12-2022 to 16-12-2022	13-02-2023 to 17-02-2023
Course Contents	Introduction on Networking, Configuration of LAN switches, Configuration of Routers, Configuration of WIFI Routers. Introduction and roll of Firewall in safe networking and browsing, Understand PF Sense, its features and benefits Configure PF Sense as a firewall Get familiar with other advanced features of PF Sense like failover, load balancing, VPN connectivity, Making bootable pen drive as your firewall, customization of firewall, discussion on dashboard menu in PF sense firewall. Testing of PF sense firewall in your own network created by you.				
INTERNET OF THINGS (IoT) USING ARDUINO UNO	22303	2 weeks	16-08-2022 to 26-08-2022		20-02-2023 to 03-03-2023
Course Contents	Introduction to microprocessor and micro controller, microprocessor VS microcontroller, introduction to ARDUINO Uno and ARDUINO software, pin details of ARDUINO and its specifications, Basic configurations of ARDUINO with pc. WIFI Bluetooth and Ethernet shield interfacing with ARDUINO. basic programs on ARDUINO UNO such as led controlling and push buttons introduction to ARDUINOS Ethernet shield, board jumper cables (male-male, male-female), light sensor, motion sensor (hc-sr501), proximity sensor (ultrasonic range meter hc-sr04), temperature sensor (tmp36), GPS module (neo6mv2) soil moisture sensor build your own project for home Automation car name plate display from mobile, Automatic water irrigation to the land.				
INTERNET OF THINGS(IoT) USING RASPBERRY PI	22304	2 weeks		14-11-2022 to 25-11-2022	06-03-2023 to 17-03-2023
Course Contents	Introduction to IOT ,Basic Networking Gateways in IOT, IOT 4.0 Introduction to Raspberry Pi and Preparing SD Card for the Raspberry Pi ,Connecting Raspberry Pi with HDMI, SSH via PC Setting Static IP Address, Connecting with WIFI ,Interfacing GPIO's in Raspberry Pi using C Program Basic Linux Commands, Installing all dependent Libraries, Starting with python Program Interfacing GPIO's using Python , Accessing GPIO via BASH Installing Web Servers, Connecting via Smart Phones, HTML, PHP, Accessing GPIO over web, CGI scripts Introduction to Node-Red concept of Simulink Programming Creating GUI ADC, Interfacing SPI protocols, Reading ADC Sensors and sending them over , applications for IO,ADC HTTP Introduction to Cloud Service and uploading Sensor data to Cloud.				
DATA ACQUISITION (DAQ) AND PROCESS INSTRUMENTATION WITH SIEMEN'S KIT	22305	2 weeks	01-08-2022 to 12-08-2022		02-01-2023 to 13-01-2023
Course Contents	The Internet of Things (IoT) is everywhere. It provides advanced data collection, connectivity, and analysis of information collected by computers everywhere—taking the concepts of Machine-to-Machine communication farther than ever before. Traditional Data Storage, Analog and Digital I/O Basics, Sensors and Data Collection Points Embedded Platforms / Microcontrollers, Software Development, Device Security: Physical and Logical, Connectivity Options Connecting Sensors to the Cloud, Scaling Number of Sensors, Workshop: IOT Sensor Utilization. In this course, participants will be introduced to the fundamentals of virtual instrumentation and graphical programming using Lab VIEW from National Instruments. With virtual instrumentation, engineers use graphical programming software to create user-defined solutions that meet their specific needs, which is a great alternative to proprietary, fixed-functionality traditional instruments. After completing the course, participants will have acquired a basic knowledge of the Lab VIEW and VEE Pro programming language. Study and acquisition of data on various sensors.				
PROCESS AUTOMATION USING PLC & SCADA/HMI	22306	2 weeks		10-10-2022 to 21-10-2022	20-03-2023 to 31-03-2023
Course Contents	Understanding Programmable Controller Systems. Identifying Common PLC Hardware. Components of Processors. Identifying Hardware Components of I/O Systems. Identifying I/O Configurations. Getting Started with Programming Systems. Creating a New Project. Determining Addresses and Assigning Symbols. Drafting Ladder Logic. Selecting and Programming Bit Instructions. Entering, Editing, and Verifying Ladder Logic. Selecting and Programming Timer /Counter Instructions. Selecting and Programming Data Handling/Compare Instructions. RSLINX – configuring the communication driver Establishing PLC communication using RSLINX. Bird's eye view of RSView . Building an RSView Project/configure PLC communication. Building Tag Database and Expressions. Creating a Graphic Display. Adding Animation to Graphic Display. Management of Screens and Controls. Alarm Management & Trending. OPC / DDE process communication with other PLCs. Analog input and Analog output. Measurement & Control of process parameters like Speed, Flow and Temperature. Implementation of PID control functions and building graphical control panel				
PROGRAMMING WITH SIEMEN'S S7-1200	22307	2 weeks	29-08-2022 to 09-09-2022	28-11-2022 to 09-12-2022	16-01-2023 to 27-01-2023
Course Contents	Introduction of PLC and its influence in the evaluation of industry automation. Conventional automaton vs recent trends in automation system as per industry 4.0. Basic digital logics, NC and NO logics and Relay in PLC. Introduction of S71200 and its features. Programming with S7-1200.Hands on program in S71200, Build your own project like DOL, Semi Automatic and Fully Automatic Star Delta starters. Build a project for automatic open and closing of garage door, automatic movement of belt and conveyer system, Automatic bottle filling system and other DoIY projects.				
IoT USING INDUSTRIAL INSTRUMENT	22308	2 weeks	12-09-2022 to 23-09-2022	19-12-2022 to 30-12-2022	
Course Contents	PC based Instrumentation. PC internal (ISA/PCI) and external Bus (RS232C, ETHERNET, USB, GPIB). Virtual Instrumentation Concepts. Graphical programming fundamentals. Agilent VEE Pro programming objects. Building application programs with Agilent VEE Pro. Create custom/user objects and user functions. Data exchange between other windows applications (DDE). Storing and retrieving data to/from files. Debug and optimize Agilent VEE programs. Building an operating interface with panels. User objects and user function panels. RS232C Interface. GPIB Interface Theory (IEEE 488.2). Controller, Talker & Listener. Controlling the RS232C instruments through PC. Controlling GPIB instruments through LAN Digital Multi-meter (Agilent -34401A, fluke 8845A), o Function Generator (Agilent- 33120A, Tektronix AFG-3021B),o Digital Storage Oscilloscope (Yokogawa – DL1520, Agilent DSO 1022A). SICL/VISA, Data Formatting/ SCPI Commands. Instrument Control Sequence. Detailed, hands-on instrument control techniques. (through Panel Driver, Direct I/O) Acquire and display Data from remote instrument. Print and plot the acquired data. USB TMC & LXI protocol. Configuring USB to GPIB gateway, LAN to GPIB gateway and Remote I/O server using Agilent I/O Connection Expert. Internet of Things (IoT) – Networks, Protocols Configuring mobile devices to access VeePro Panel view Web Monitoring				
BASIC COURSE ON MECHATRONICS WITH SIEMEN'S KIT	22309	1 week		03-10-2022 to 07-10-2022 24-10-2022 to 28-10-2022	06-02-2023 to 10-02-2023
Course Contents	Basic electrical components, Basic mechanical components and electrical drives, Basic hydraulic and pneumatic control units and fundamentals of PLCs				

METROLOGY & ENGINEERING INSPECTION (MEI)

Name of the Course	Course Code	Course Duration	Course Schedules		
			Jul 2022 – Sep 2022	Oct 2022 - Dec 2022	Jan 2023 - Mar 2023
METROLOGY AND ENGINEERING INSPECTION	22401	2 weeks	01-08-2022 to 12-08-2022 29-08-2022 to 09-09-2022	03-10-2022 to 14-10-2022 31-10-2022 to 11-11-2022 28-11-2022 to 09-12-2022	02-01-2023 to 13-01-2023 30-01-2023 to 10-02-2023 27-02-2023 to 10-03-2023
Course Contents	Introduction to inspection and quality control, limits, fits, tolerances and limit gauges, linear measurements, optical measuring instruments, calibration techniques, error in measurement process, statistical process control techniques, metrology lab practice for understanding, handling & usage of various instruments listed in above categories.				
BASIC PRACTICES IN DIMENSIONAL MEASURING INSTRUMENTS	22402	1 week	16-08-2022 to 19-08-2022 12-09-2022 to 16-09-2022 26-09-2022 to 30-09-2022	17-10-2022 to 21-10-2022 14-11-2022 to 18-11-2022 12-12-2022 to 16-12-2022	16-01-2023 to 20-01-2023 13-02-2023 to 17-02-2023 13-03-2023 to 17-03-2023 27-03-2023 to 31-03-2023
Course Contents	Introduction to metrology and its standards of measurement, Practices in dimensional measurements using Vernier Caliper, Micrometer, Vernier Height Gauge and Manual CMM with conventional and digital instruments				
CALIBRATION OF DIMENSIONAL MEASURING INSTRUMENTS & GAUGES	22403	1 week	22-08-2022 to 26-08-2022 19-09-2022 to 23-09-2022	24-10-2022 to 28-10-2022 21-11-2022 to 25-11-2022 19-12-2022 to 23-12-2022	23-01-2023 to 27-01-2023 20-02-2023 to 24-02-2023 20-03-2023 to 24-03-2023
Course Contents	Introduction to inspection and quality control, limits, fits, tolerances and limit gauges, linear measurements, optical measuring instruments, calibration techniques, error in measurement process, metrology lab practice for understanding, handling & usage of various instruments listed in above categories.				

MACHINE TOOL MAINTENANCE (MTM)

Name of the Course	Course Code	Course Duration	Course Schedules		
			Jul 2022 – Sep 2022	Oct 2022 - Dec 2022	Jan 2023 - Mar 2023
CONDITION MONITORING OF INDUSTRIAL MACHINES	22501	1 week	16-08-2022 to 19-08-2022 05-09-2022 to 09-09-2022 26-09-2022 to 30-09-2022	17-10-2022 to 21-10-2022 12-12-2022 to 16-12-2022	16-01-2023 to 20-01-2023 20-02-2023 to 24-02-2023 06-03-2023 to 10-03-2023
Course Contents	Industrial safety introduction to machine tool maintenance and types of maintenance, Bearing – types, specification, and inspection, Bearing selection, bearing failures, causes and remedy Lubricant types, characteristics, oil selection and lubrication methods .Condition monitoring of bearings, failure analysis. Mounting of bearing using bearing mounting kit mounting of bearing using spiral heater, Viscosity measurement of Lube Oil , Lubricant contamination test by oil check monitor, Sound monitoring by engineering stethoscope, Shock monitoring by shock pulse meter, data collection, recording and analysis of failures.				
PAINTING TECHNIQUES, DEFECTS, CAUSES & REMEDIES	22502	1 week	01-08-2022 to 05-08-2022 22-08-2022 to 26-08-2022 19-09-2022 to 23-09-2022	10-10-2022 to 14-10-2022 19-12-2022 to 23-12-2022	23-01-2023 to 27-01-2023 20-03-2023 to 24-03-2023
Course Contents	Safety precautions, painting of tools & equipments, surface preparation of metals & wood, Varnishing of wooden surfaces, constituents of paints , application of paints, car finishing , cement surface defects & wall painting, painting defects & remedies, Lettering & stenciling, safe working practices, wooden surface preparation & painting, polishing / varnishing of wooden surface metal surface preparation & painting, Colors & mixing of colors, Letter writing & stencil cutting practice, White color washing of walls				
MATERIAL HANDLING IN WORK-SHOP AND PROCESS PLANT	22503	1 week	29-08-2022 to 02-09-2022	24-10-2022 to 28-10-2022 14-11-2022 to 18-11-2022 05-12-2022 to 09-12-2022 26-12-2022 to 30-12-2022	02-01-2023 to 06-01-2023 30-01-2023 to 03-02-2023 13-03-2023 to 17-03-2023
Course Contents	Industrial Safety, Material Handling, Fluid power system (Hydraulics & Pneumatics) , Fluid power symbol, elements & their circuits, Chains, hooks & ropes, Hydraulic Jacks, Fork Lift, Chain Hoist & Trolleys, Cranes, Overhauling of Hydraulic Jacks, Servicing of Hydraulic valves, Knots used in material handling, Operation & Maintenance of Fork Lift , Operation & Maintenance of Chain Hoist, Operation & Maintenance of Trolleys.				
5's' WORK PLACE MANAGEMENT & TOTAL PRODUCTIVE MAINTENANCE	22504	1 week	08-08-2022 to 12-08-2022 12-09-2022 to 16-09-2022	03-10-2022 to 07-10-2022 31-10-2022 to 04-11-2022 21-11-2022 to 25-11-2022	06-02-2023 to 10-02-2023 27-02-2023 to 03-03-2023 27-03-2023 to 31-03-2023
Course Contents	Industrial safety, introduction to machine tool maintenance and types of maintenance Autonomous maintenance, pillars of total productive maintenance major losses associated with production, Condition monitoring methods, Total Productive Maintenance – policies and goals, 5 'S' work place management, QC tool autonomous maintenance practices on machine tools Practice on 5 'S' implementation Practice on sorting and arranging. Practice on TPM – check points on bearing, lubrication, and hydraulics, Preparation of layout for a given task.				

PRODUCTION TECHNOLOGY (PT)

Name of the Course	Course Code	Course Duration	Course Schedules		
			Jul 2022 – Sep 2022	Oct 2022 - Dec 2022	Jan 2023 - Mar 2023
MANUFACTURING PROCESS & TECHNIQUES IN PRODUCTION TECHNOLOGY	22601	2 weeks		31-10-2022 to 11-11-2022	16-01-2023 to 27-01-2023
Course Contents	Introduction, course objectives and safety in manufacturing process introduction to machines and equipment in PT section and visit to all sections of NSTI ,precision and accuracy with suitable examples and overview on quality and ppm, practice on conventional lathe inter changeability ,fit limit, tolerance and allowances as per is and BIS standards, practice on conventional lathe, importance of cutting speed ,rpm, and feed and calculations, practice on CNC lathe cutting tool materials practice on up and down milling, jigs and fixtures, practice on up and down milling, importance heat treatment,types and hardness testing, practice on CNC milling ,surface finishing techniques, practice on grinding introduction to 5 'S' concepts and kaizen				
MULTISKILL TRAINING ON TURNING AND GRINDING	22602	2 weeks	01-08-2022 to 12-08-2022	17-10-2022 to 28-10-2022	02-01-2023 to 13-01-2023
Course Contents	Turning on lathe machine and grinding, Plain turning, Step turning, grooming, forming shoulders and taper turning by various method, grinding a single point cutting tool and screw cutting.				
MULTISKILL TRAINING ON MILLING AND GRINDING	22603	2 weeks	16-08-2022 to 26-08-2022	21-11-2022 to 02-12-2022	30-01-2023 to 10-02-2023
Course Contents	Milling machine operations, plain milling , face milling, side milling, straddle milling, angular milling, gang milling, form milling, profile milling, end milling, gear cutting, helical milling.				

MULTISKILL TRAINING ON TURNING, MILLING AND GRINDING	22604	2 weeks	29-08-2022 to 09-09-2022	05-12-2022 to 16-12-2022	20-02-2023 to 03-03-2023
Course Contents	Turning on lathe machine and grinding, Plain turning, Step turning, grooming, forming shoulders and taper turning by various method, grinding a single point cutting tool and screw cutting. Milling machine operations, plain milling, face milling, side milling, straddle milling, angular milling, gang milling, form milling, profile milling, end milling, gear cutting, helical milling.				
DESIGN AND MANUFACTURING OF PRESS TOOLS	22605	2 weeks	12-09-2022 to 23-09-2022		06-03-2023 to 17-03-2023
Course Contents	Scope of press working and types of press tool operations theory, machining processes- turning, milling, drilling, tapping and grinding, Theory of cutting and effect of excessive and insufficient die clearance. Steps involved in designing press tool, determination of cutting force and die clearance, types of presses and selection criteria computing die thickness and margins and punch dimensioning., Standard die sets, scrap strip & strip layout for blanking, die block and punch design, Types of stripers, stripper design, stripping force and stock stops, Fasteners and fastening methods, Dowels and doweling methods., die materials and heat treatment of dies and punches, jig boring, jig grinding, EDM and wire cut EDM operations for precise machining of die holes, Methods of repairing defective and worn out punches and dies, failure analysis of press tools, die setting, manufacturing of press tool (progressive tool) elements by conventional machining process viz. turning, milling, grinding, drilling, tapping etc. practical, jig boring operation of machining die holes, heat treatment press tool elements				
DESIGN AND MANUFACTURING OF JIGS AND FIXTURES	22606	2 weeks	26-09-2022 to 07-10-2022	19-12-2022 to 30-12-2022	20-03-2023 to 31-03-2023
Course Contents	Introduction, course objectives and safety in workshop theory, batch production and mass production, Machining processes- turning, milling, drilling, tapping and grinding, Necessity and advantages of jigs and fixtures, Elements of jigs and fixtures and principles of jigs and fixtures design, Principles of location and location methods. Principles of clamping and clamping methods Types of drill jigs and drill bushes, Fasteners and fastening methods, Dowels and doweling methods, jig boring, EDM and wire cut EDM processes for precise machining of drill bush location holes, Design aspects of milling fixtures, Types of milling fixtures, Limits & fits, Welding, grinding and broaching fixtures, Materials and heat treatment of jigs and fixture elements, Inspection fixtures. Geometrical features, Modular jig and fixtures, study of drawings and planning for manufacturing drill jig, practical manufacturing of drill jig elements by conventional machining process viz. milling, turning, grinding, drilling, tapping etc, jig boring operation for drill bush location holes, assembling and try out of drill jig, study of drawings and				

HYDRAULIC & PNEUMATIC CONTROLS (HPC)

Name of the Course	Course Code	Course Duration	Course Schedules		
			Jul 2022 – Sep 2022	Oct 2022 - Dec 2022	Jan 2023 - Mar 2023
BASIC PNEUMATIC, ELECTRO PNEUMATIC AND HYDRAULIC SYSTEM	22701	2 weeks	16-08-2022 to 26-08-2022 19-09-2022 to 30-09-2022	28-11-2022 to 09-12-2022	09-01-2023 to 20-01-2023 13-02-2023 to 24-02-2023
Course Contents	Introduction to Pneumatics and Hydraulic Control Systems, Pneumatics & Hydraulic Symbol, Block Diagrams, and working principles. Production, purification and Distribution of air, Construction of pneumatic circuit with direct & indirect control, application of Limit switches Relay, & Sensors. Maintenance of Pneumatics, Electro – Pneumatics control systems. Characteristics of PCV, FCV, DCV and their multiplication of forces. Applications of Relays-Contactors, Electrical Timers. Construction of Control Circuits in Industrial Application. Preventive Maintenance of Pneumatics and Electro Pneumatic, Hydraulic System. Identification of Components, Pneumatics and Hydraulic Control Systems. Construction and testing of circuits using Single and Double acting cylinders. Construction of AND, OR, NOT circuit using Double acting cylinder and limit switches. Construction of circuits for pneumatic circuit with use of limit switch, time delay valve, quick return valve, etc. Practice on Simulation software. Construction and Testing of Electro Hydraulic circuit using Sensors, Proximity switches, etc. Design of Electro-pneumatic circuit with the help of FLUID SIM Software. Overhauling of Hydraulic Jack, Power Pack, etc				
MAINTENANCE OF PNEUMATIC AND HYDRAULIC CONTROL SYSTEMS	22702	2 weeks		03-10-2022 to 14-10-2022 14-11-2022 to 25-11-2022	23-01-2023 to 03-02-2023
Course Contents	Introduction to HPC preparation and conditioning of compressed air and its distribution, read and interpret a variety of schematic drawings. hydraulic advantage – mechanical leverage, multiplication of forces, hydraulic fluid, seal, accumulator preventive maintenance actions. Identification of hydraulic and pneumatic components by their schematic symbols, troubleshoot common pneumatic components circuits. Prevent hydraulic system contamination, troubleshooting of industrial pneumatic and hydraulic circuits shaping machine, surface grinder, main failures of the following hydraulic components causes and corrective actions: pumps– directional control valves pressure control valves flow control valves				
APPLICATION OF HYDRAULIC AND ELECTRO HYDRAULIC CONTROL SYSTEMS	22703	1 week	05-09-2022 to 09-09-2022	19-12-2022 to 22-12-2022	13-03-2023 to 17-03-2023
Course Contents	Basics & introduction to electro hydraulic controls, symbols - relays & its contacts, proximity sensors timers & counters. Design of different circuits' maintenance of electro hydraulic control systems., Discussion of different application circuits				
APPLICATION OF PNEUMATIC AND ELECTRO PNEUMATIC CONTROL SYSTEMS	22704	1 week	01-08-2022 to 05-08-2022 29-08-2022 to 02-09-2022	17-10-2022 to 21-10-2022 12-12-2022 to 16-12-2022	27-02-2023 to 03-03-2023
Course Contents	overview of pneumatic system, single solenoid, double solenoid valves, electrical control components - PBS, relays, limit switches, proximity sensors, pressure switches, timers, counters, etc. Development of typical electro-pneumatic circuits and Synchronization of multi cylinders and software simulation of electro-pneumatic.				
PNEUMATIC AND ELECTRO PNEUMATICS AUTOMATION WITH PLC	22705	1 week	12-09-2022 to 16-09-2022	26-12-2022 to 30-12-2022	20-03-2023 to 24-03-2023
Course Contents	Basics of HPC, Symbols, working principles, function and use of single, double solenoid valves - 4/2, 4/3, pressure switches, function and applications of programmable logic controllers, function and operations of input/output modules in programmable logic controllers. Translating ladder diagrams into standardized rung diagrams compatible with programmable logic controllers programming functions, applications and advantages of counters and timers in programmable logic controllers, PLC programming / executing, running and verifying accuracy of simple programs, simulation, modifying an existing program and executing and verifying its accuracy, perform required connections from programmable logic controllers to the input and output devices and verify accuracy of system operation, construction of ladder programming for various operations.				

CISCO NETWORKING LAB

Name of the Course	Course Code	Course Duration	Course Schedules		
			Jul 2022 – Sep 2022	Oct 2022 - Dec 2022	Jan 2023 - Mar 2023
BASIC COURSE ON NETWORKING	22801	2 weeks	01-08-2022 to 12-08-2022 29-08-2022 to 09-09-2022	24-10-2022 to 04-11-2022 21-11-2022 to 02-12-2022 05-12-2022 to 16-12-2022 19-12-2022 to 30-12-2022	30-01-2023 to 10-02-2023 27-02-2023 to 10-03-2023
Course Contents	The architectures, models, protocols, and networking elements that connect users, devices, applications and data through the Internet and across modern computer networks - including IP addressing and Ethernet fundamentals.				
BASIC COURSE ON SWITCHING, ROUTING, AND WIRELESS ESSENTIALS	22802	2 weeks	16-08-2022 to 26-08-2022 26-09-2022 to 07-10-2022	07-11-2022 to 18-11-2022	16-01-2023 to 27-01-2023 13-02-2023 to 24-02-2023
Course Contents	Switching technologies - router operations that support small-to-medium business networks - wireless local area networks (WLAN) and security concepts.				

CAD/CAM

Name of the Course	Course Code	Course Duration	Course Schedules		
			Jul 2022 – Sep 2022	Oct 2022 - Dec 2022	Jan 2023 - Mar 2023
APPLICATION OF AUTOCAD 2D & 3D DRAFTING IN ENGINEERING DESIGN	22901	2 weeks	01-08-2022 to 12-08-2022 29-08-2022 to 09-09-2022	24-10-2022 to 04-11-2022 21-11-2022 to 02-12-2022 05-12-2022 to 16-12-2022 19-12-2022 to 30-12-2022	30-01-2023 to 10-02-2023 27-02-2023 to 10-03-2023
Course Contents	Introduction, admission, familiarization with institute introduction to auto cad, drawing layouts, tool bars, file creation, save, open existing drawings, creation of drawing sheet as per ISO, create line, break, erase, undo, absolute co-ordinate system related exercises using absolute co-ordinate system relative co-ordinate system and polar co-ordinate system, related exercises using relative co-ordinate system, polar coordinate system. Trim, offset, fillet, chamfer commands drawing practice using trim, offset, fillet, chamfer commands arc, circle commands drawing practice using arc, circle commands move, copy, array, insert block, make block, scale, rotate, hatch commands drawing practice using move, copy, array, insert block, make block, scale, rotate, hatch commands creating templates, inserting drawings, layers drawing practice using creating templates, inserting drawings, layers dimensioning drawings, creating styles in dimensioning. Drawing practice using dimensioning drawings, creating styles in dimensioning, introduction to 3d, 3d primitives, extrude, revolve command drawing practice using 3d primitives, extrude, revolve command setting user co-ordinate systems, rotating, plotting, print preview 3d drawing by using user co-ordinate systems. Plotting, print preview				
APPLICATION OF INVENTOR IN ENGINEERING DESIGN	22902	2 weeks	12-09-2022 to 23-09-2022	10-10-2022 to 21-10-2022	02-01-2023 to 13-01-2023 20-03-2023 to 31-03-2023
Course Contents	Introduction, admission, familiarization with institute, Autodesk inventor user interface, view manipulation, designing parametric parts, making work directory & tool bar settings. create 2d sketches – geometric constraints – dimensional sketches, creating basic sketched features, intermediate sketches, editing parametric parts, creating chamfers and fillets, creating holes & threads, patterning & mirroring features, creating thin walled parts, designing assemblies, using project files in assembly design placing components in an assembly constraining components, placing standard components, basic part design in an assembly, assembly centric bill of materials, creating and customizing parts lists, creating balloons, setting drawing standards, drawing resources, identifying parts in an assembly, analysis and motion tools, presenting your assembly, making assembly – insert bolted connection, making detailing, drawing creation environment, base and projected views, section views, crapped views, detail views, managing views, automated dimensioning techniques, manual dimensioning techniques, revision tables and tags, introduction to design accelerators, bolted connections, annotating holes and threads, creating centerlines, symbols and leaders, simulation using Autodesk inventor, annotating holes and threads, creating centerlines, symbols and leaders, simulation using Autodesk inventor, introduction to plot & different ways of plotting.				
APPLICATION OF SOLID WORKS IN ENGINEERING DESIGN	22903	2 weeks	16-08-2022 to 26-08-2022 26-09-2022 to 07-10-2022	07-11-2022 to 18-11-2022	16-01-2023 to 27-01-2023 13-02-2023 to 24-02-2023
Course Contents	Sketching features – applied features constraints, extrudes bosses and cuts, add fillets, changing dimensions, revolved features using axes, circular patterning changes and rebuild problems, bottom up assembly modeling components configuration in an assembly, insert subassemblies, interference detection, drawing and detailing, create drawing sheets, add drawing items, named views, standard three views, auxiliary views, section views, detail views, sweep, loft and library features, exploded views- configuration manager, animation controller, create the best profile sketch, copy& paste filleting editing. Creating ribs, mirror pattern, The whole wizard, inset design table, creating assembly, insertion, driving dimensions, bill of materials, annotation, alternate position view, reattach and replace dimensions, edit sketch, edit sketch plane, edit definition. Create sweep and loft using library features.				

CNC CENTRE

Name of the Course	Course Code	Course Duration	Course Schedules		
			Jul 2022 – Sep 2022	Oct 2022 - Dec 2022	Jan 2023 - Mar 2023
CNC TURNING - PROGRAMMING & OPERATION WITH SINUMERIK 802D SL	221001	1 week	05-09-2022 to 09-09-2022	28-11-2022 to 02-12-2022	30-01-2023 to 03-02-2023
Course Contents	Comparison between conventional & CNC machines, principles of CNC system & elements of CNC machines preparatory and miscellaneous codes different co ordinate systems work offset, tool offsets part program of turning & milling practice on simulation system selection of tools, speed, feed & depth of cut subroutine programming, machine cycles editing & proving the part program basic machine operations loading of component & tools measurement of zero offsets and tool offsets editing of part programs proving selected programs & machining of components				
CNC TURNING - PROGRAMMING & OPERATION WITH FANUC O-i TF	221002	1 week	26-09-2022 to 30-09-2022	17-10-2022 to 21-10-2022 19-12-2023 to 23-12-2023	13-02-2023 to 17-02-2023
Course Contents	CNC machines working principles, features of CNC system & elements of CNC machines concept of CNC programming programming with basic 'g' codes & 'm' codes different co-ordinate systems, measurement of zero offsets, part program of turning with canned cycles subroutine programming, selection of tools, speed, feed & depth of cut, hands on experience on windows based CNC simulator, basic machine operations, measurement of zero offsets, editing of part programs, proving selected programs & Machining of Components				
CNC TURN MILL - PROGRAMMING & OPERATION WITH FANUC O-i TF	221003	2 weeks	08-08-2022 to 19-08-2022	24-10-2022 to 04-11-2022	02-01-2023 to 13-01-2023 27-02-2023 to 10-03-2023
Course Contents	CNC machines working principles. features of CNC system & elements of CNC machines, concept of CNC programming, programming with basic 'g' codes & 'm' codes, different co-ordinate systems measurement of zero offsets, part program of turning- external features and internal features using built in cycles, part programming of milling profile with 'c' axis selection of tools, speed, feed & depth of cut practical : hands on experience on windows based CNC simulator, basic machine operations measurement of zero offsets, editing of part programs proving selected programs & machining of component				
CNC MILLING - PROGRAMMING & OPERATION WITH SINUMERIK 828D	221004	2 weeks	22-08-2022 to 02-09-2022	05-12-2022 to 16-12-2022	16-01-2023 to 27-01-2023 20-02-2023 to 03-03-2023
Course Contents	Comparison between conventional & CNC machines principles of CNC system elements of CNC machines preparatory and miscellaneous functions / codes different co-ordinate systems zero offsets, tool offsets part program of milling practice on simulation system selection of tools, speed, feed & depth of cut subroutine programming, machine cycles editing & proving the part program basic machine operations loading of component & tools measurement of zero offsets and tool offsets editing of part programs proving selected programs & machining of components				
MASTERCAM TURNING & MILLING	221005	2 weeks	12-09-2022 to 23-09-2022	14-11-2022 to 25-11-2022	13-03-2023 to 24-03-2023
Course Contents	Introduction to master cam 2019, draw commands, modify commands, 2d & 3d part modeling exercises, cam commands, 2d machining techniques & 3d machining techniques, post processing for the machine controls, sample machining on the machine.				
CNC TURNING - PROGRAMMING & OPERATION WITH FAGOR 8055	221006	1 week		10-10-2022 to 14-10-2022 26-12-2022 to 30-12-2022	27-03-2023 to 31-03-2023
Course Contents	CNC machines working principles. features of CNC system & elements of CNC machines concept of CNC programming programming with basic 'g' codes & 'm' codes different co-ordinate systems measurement of zero offsets part program of turning with canned cycles subroutine programming selection of tools, speed, feed & depth of cut hands on experience on windows based CNC simulator, basic machine operations measurement of zero offsets, editing of part programs proving selected programs & machining of components.				

HEAT TREATMENT & MATERIAL TESTING (HT & MT)

Name of the Course	Course Code	Course Duration	Course Schedules		
			Jul 2022 – Sep 2022	Oct 2022 - Dec 2022	Jan 2023 - Mar 2023
CONCEPTS, TECHNIQUES & PRACTICES OF HEAT TREATMENT AND MATERIAL TESTING	221101	2 weeks	29-08-2022 to 09-09-2022	24-10-2022 to 04-11-2022	27-02-2023 to 10-03-2023
Course Contents	The basic concepts ferrous & non ferrous metallurgy, classification of steel, effects of alloying element of steel, Rockwell hardness testing method, Brinell hardness testing method, Vickers hardness testing method, practice on hardness measurement, stages of heat treatment, practice on selection of heat treating temperature w.r.t the iron carbon (plain carbon steel) equilibrium diagram, kinds of heat treatment process - annealing, stress relieving, normalizing, hardening, tempering and practice on kinds of heat treatment, Enrichsen cupping testing method, tensile & impact testing methods, liquid penetration & magnetic particle inspection methods & practices.				
CONCEPTS, TECHNIQUES & PRACTICES OF SURFACE NDT METHODS	221102	1 week		03-10-2022 to 07-10-2022 19-12-2022 to 23-12-2022	06-02-2023 to 10-02-2023
Course Contents	Introduction to non-destructive method types of discontinuities in weldments/castings, Liquid penetration inspection method, magnetic particle inspection method, practice on liquid penetration inspection method, practice on magnetic particle inspection method				
CONCEPTS, TECHNIQUES & PRACTICES OF MECHANICAL TESTING OF METALS (DT&NDT)	221103	2 weeks	15-08-2022 to 26-08-2022 19-09-2022 to 30-09-2022	07-11-2022 to 18-11-2022	16-01-2023 to 27-01-2023 20-03-2023 to 31-03-2023
Course Contents	The basic concepts of ferrous and non-ferrous metallurgy, classification of steel, effects of alloying element on steel introduction to destructive testing, Rockwell hardness testing method, Brinell hardness testing method, Vickers hardness testing method, tensile testing method impact testing method introduction to non-destructive method types of discontinuities in weldments /castings liquid penetration inspection method magnetic particle inspection method, ultrasonic inspection testing method radiographic testing method . importance of in-situ metallographic (suggested by the committee practice on Rockwell hardness testing method ,practice on Brinell hardness testing method ,practice on Vickers hardness testing method, practice on tensile testing practice on impact testing ,practice on liquid penetration inspection method, practice on magnetic particle inspection method, practice on ultrasonic inspection testing method, demo on radiographic testing method.				
CONCEPTS, TECHNIQUES & PRACTICES OF HEAT TREATING FOR THE NON HEAT TREATER	221104	1 week	12-09-2022 to 16-09-2022	28-11-2022 to 02-12-2022	02-01-2023 to 06-01-2023 20-02-2023 to 24-02-2023
Course Contents	The concepts and technical terms of engineering metallurgy, The basic concepts of ferrous and non-ferrous metallurgy, Classification of steel, Effects of alloying element on steel, Stages of heat treatment. Heat colors for steel. Identify the different types of heat treatments for steel and welded fabrication, Furnace types, materials and heating methods Selection of right material in the right condition and assess material suitability for a particular application, Types of cracking in welded fabrication causes and avoidance, Types of mechanical testing, Practice on hardness measurement, Practice on selection of heat treating temperature w.r.t the iron-carbon (plain carbon steel) equilibrium diagram, Practice on annealing, Practice on normalizing, Practice on hardening, Practice on tempering, Practice on stress relieving, Practice on solution treatment				
CONCEPTS, TECHNIQUES & PRACTICES OF HEAT TREATMENT OF STEEL AND SAFETY	221105	1 week	01-08-2022 to 05-08-2022 05-09-2022 to 09-09-2022	17-10-2022 to 21-10-2022 12-12-2022 to 16-12-2022	09-01-2023 to 13-01-2023 30-01-2023 to 03-02-2023
Course Contents	Basic metallurgical theory of heat treatment, Introduction to steel and its mechanical properties, Objectives of heat treatment of steel Introduction to hardness testing Rockwell hardness testing method. Brinell hardness testing method, Vickers hardness testing method, Stages of heat treatment, Heat colors for steel Kinds of heat treatment processes-annealing, Stress-Relieving Normalizing, Hardening, tempering, Tempering colors for plain carbon steel, Importance of the iron-carbon (plain carbon steel) equilibrium diagram, Importance of TTT diagram-Time temperature transformation- Bainite and Martensite, Quenching principles, Media and practice. Soaking periods for Hardening, Annealing, and Normalizing Steel, Introduction to surface hardening methods, Heat treatment defects and remedy, Hints on labor safety, Responsibilities of personnel, Protective clothing and equipment, Disposal of used salts, General precautions. Practice on Rockwell hardness testing method Practice on Brinell hardness testing method Practice on Vickers hardness testing method. Practice on selection of heat treating temperature w.r.t the iron-carbon (plain carbon steel) equilibrium diagram, Annealing normalizing hardening tempering Practice on different quenching media				

ADVANCED WELDING (AW)

Name of the Course	Course Code	Course Duration	Course Schedules		
			Jul 2022 – Sep 2022	Oct 2022 - Dec 2022	Jan 2023 - Mar 2023
Stainless steel welding using TIG & MIG techniques	221201	2 weeks	15-08-2022 to 26-08-2022 19-09-2022 to 30-09-2022	24-10-2022 to 04-11-2022 28-11-2022 to 09-12-2022	09-01-2023 to 20-01-2023 13-02-2023 to 24-02-2023
Course Contents	Introduction to welding process instruments , Basic Electrical Terms & Arc voltage concepts , Power source of GTAW welding, AC, DC Suppressor & HFU , Types of tungsten electrodes and its tip preparations , Characteristic of Inert gas , Types of SS and its metallurgy for welding , Introduction of MIG welding on S.S , Current setting, Arc voltage – parameter , Defects, causes and remedy , Oxy-Acetylene welding for torch holding practice , GTAW welding machine, current settings & bead practice , Selection of tungsten electrode for AC & DC welding , Butt & fillet joint practice on S.S by GTAW process , Preparation of S.S. for MIG Welding – current setting , Butt & fillet joint practice on S.S. by MIG Process , Inspection & Testing of aluminum joints.				
TIG welding techniques & its applications	221202	1 week	08-08-2022 to 12-08-2022	10-10-2022 to 14-10-2022 21-11-2022 to 25-11-2022	02-01-2023 to 06-01-2023 30-01-2023 to 03-02-2023 06-03-2023 to 10-03-2023
Course Contents	Introduction, awareness of welding & safety , Terms & definition of welding , Electrical terms & AC, DC Polarity control system , Introduction to GTAW equipments and power source ,Types of tungsten electrodes and their uses , Types of Inert gases and their character in shielding ,Properties of ferrous & non- ferrous metals , Principle of HF unit & DC suppressor, torches and maintenance , Concept of pulsed TIG Welding , Defects, causes and remedy . Oxy-Acetylene welding practice on M.S. TIG Welding machine current setting & operation- safety , Depositing bead by GTAW , Joints on M.S. Sheets (Butt& Fillet) , Joints on Aluminum (Butt & fillet) , Joints on Stainless Steel (Butt & Fillet) ,Polarity control system ,Pulsed/wave current activities.				
MIG welding techniques & its applications	221203	1 week	01-08-2022 to 05-08-2022	17-10-2022 to 21-10-2022 12-12-2022 to 16-12-2022	06-02-2023 to 10-02-2023 27-02-2023 to 03-03-2023
Course Contents	Introduction – awareness of welding & safety , introduction to gas metal arc welding (GMAW), welding terms and definitions , electrical terms power source & equipments , various shielding gases and its character on GMAW , cylinder colour code & identifications ,GMAW welding electrodes – codes , torches & maintenance , wire feed unit , modes of metal transfer synergic & pulsed MIG welding FCA welding process, defects causes and remedy , depositing bead by GMAW butt, fillet joint by GMAW dip transfer , cruciform joint on ms sheet in 1f, 2f, 3f & 4f , single "v" joint on ms by co2 welding, square butt joint on ,single "v" joint on aluminum				
Aluminium welding using TIG techniques	221204	1 week	12-09-2022 to 16-09-2022	14-11-2022 to 18-11-2022 26-12-2022 to 30-12-2022	23-01-2023 to 27-01-2023 20-03-2023 to 24-03-2023
Course Contents	introduction to welding process instruments , basic electrical terms & arc voltage concepts , power source of GTAW welding, ac, dc suppressor & HFU , types of tungsten electrodes and its tip preparation , characteristic of inert gas , properties of aluminum , introduction of MIG welding on aluminum , current setting, arc voltage parameter , defects causes and remedy . oxy acetylene welding for torch holding practice ,GTAW welding machine, current setting & bead practice ,preparation of tungsten electrode ac& dc welding , butt & fillet joint practice on aluminum by GTAW process , edge preparation for MIG welding – current setting , butt & fillet joint practice on aluminum by MIG process , inspection & testing of aluminum joints .				

HEAT ENGINES (HE)

Name of the Course	Course Code	Course Duration	Course Schedules		
			Jul 2022 – Sep 2022	Oct 2022 - Dec 2022	Jan 2023 - Mar 2023
DIAGNOSIS, REPAIR & MAINTENANCE OF MPFI PETROL ENGINES	221301	2 weeks	22-08-2022 to 02-09-2022	03-10-2022 to 14-10-2022 12-12-2022 to 23-12-2022	16-01-2023 to 27-01-2023
Course Contents	Classification of engines, latest development on petrol engines, principle and working of two stroke & four stroke engine, engine component scavenging of IC engines valve operating mechanism and variable valve timing technology (VVT), function, components and working of lubrication system function, components and working of cooling system, fuel feed system and its types ignition system and its types MPFI system in petrol engine, emission control emission norm turbo charged engine, maintenance of engine engine troubles-starting problems related to engine, diagnostic methods and remedy starting and stopping the petrol engine & set the idle rpm check the compression pressure, vacuum pressure & oil pressure on the engine dismantling, cleaning, inspecting and reassembling the petrol engine cylinder head overhauling, set the ignition timing on MPFI petrol engine, testing of spark plug, distributor and ignition coil set the valve timing, checking and adjusting valve tappet clearance inspection of cooling system, overhauling of lubrication system, overhauling of fuel feed system, onboard diagnosis using scan tool, checking of sensors and actuators, checking of exhaust gas using exhaust gas analyzer				
DIAGNOSIS, REPAIR & MAINTENANCE OF CRDI DIESEL ENGINES	221302	2 weeks	05-09-2022 to 16-09-2022	24-10-2022 to 03-11-2022	30-01-2023 to 10-02-2023 20-03-2023 to 31-03-2023
Course Contents	Classification of engines, latest development on diesel engines, principle and working of two stroke & four stroke engine, engine components valve operating mechanism, function, components and working of lubrication system, function, components and working of cooling system, fuel system and its types CRDI system in diesel engine, emission control, euro emission norm, turbo charged engine, maintenance of engine do's and don'ts engine troubles- diagnostic methods and remedy, starting and stopping the diesel engine & set the idle rpm, check the compression pressure on the engine dismantling, cleaning, inspecting and reassembling the diesel engine cylinder head overhauling set the injection timing on diesel engine, set the valve timing, checking and adjusting valve tappet clearance, overhauling of cooling system, overhauling of lubrication system, overhauling of fuel feed system, onboard diagnosis using scan tool, checking of sensors and actuators in CRDI, checking of exhaust gas using exhaust gas analyzer				
DIAGNOSIS AND REPAIR IN AUTOMOBILE ELECTRICAL CIRCUITS & AUTOTRONICS	221303	2 weeks	01-08-2022 to 12-08-2022 19-09-2022 to 30-09-2022	07-11-2022 to 18-11-2022	20-02-2023 to 03-03-2023
Course Contents	Basic principles of electricity, electrical symbols & ISI wiring color code, function of auto electrical system and types construction of battery and its maintenance function, components and working of different types of ignition system in vehicles function, components and working of cooling system in vehicles function, components and working of starting system and its types lighting system in modern vehicles and accessories-wiper motor, power window, multiplex wiring, remote central locking system, immobilizer system, parking assist system, vehicle safety system & navigation system troubleshooting of electrical circuit basic electronics, symbols, checking procedure of passive component, diodes, transistors, capacitors and their applications in automobiles, relay types and its working, solenoid & its principle of working, basic principle and working of logic gates and its application reading of electrical wiring diagram of a vehicle checking and charging of battery overhauling of alternator and testing of alternator overhauling of starter motor and testing of starter motor checking of lighting system and accessories checking of passive component, diodes, transistors, capacitors testing of different relays used in vehicles, testing of solenoid testing of electronic ignition system, inspecting of sensors and actuators testing of logic circuit outputs, fault finding on power steering electronics in automobiles working E-DS (electronic distributor less ignition system, importance of earthling working principle of instruments and gauges, warning symbols working principle of sensors – throttle position (potentiometer), air temperature (thermostat), engine coolant temperature, manifold absolute pressure (piezo-resistive & piezo-electric type), camshaft and crank shaft position sensors (magnetic pick up type), oxygen sensor, knock sensor, actuators-iac actuator, stepper motor and injectors, fan switch, ac switch. construction and working principle of pneumatic and hydraulic system injectors, basic structure and operation of a microcomputer, ecm and its wiring system, onboard diagnostic system and use of scan tool				
MAINTENANCE OF LIGHT MOTOR VEHICLES (PETROL, DIESEL) & CAR A.C.	221304	2 weeks		21-11-2022 to 02-12-2022 26-12-2022 to 06-01-2023	06-03-2023 to 17-03-2023
Course Contents	Introduction about vehicle, registering body, approval body, inspection body, general specification and technical specification of light motor vehicles, classification of engine, latest development on petrol & diesel engines, principle and working of two stroke & four stroke engine, engine systems and its maintenance, valve mechanism, valve clearance and its importance. layout and function of transmission system, components of transmission system and its maintenance, components of brake system, suspension system, steering system and their maintenance, tyre specification & classification, tyre inflation and its maintenance importance of wheel alignment and wheel balancing, construction of battery and its maintenance, car air conditioning system principles. working and maintenance, emission control, BS identification of vehicle components, checking of under chassis, maintenance of chassis and suspension system, checking of air inflation pressure and tyre rotation, checking of engine oil level, coolant level, brake oil and power steering oil and top up, checking of electrolyte level in battery and top up, testing and charging of battery, replacing of fuel filter, air filter and oil filter, cleaning of vehicle, 5s method, identification of engine fault using scan tool, checking of car air conditioning system and its components, inspection and replacing of spark plug, adjustment of clutch, brake and steering free play, vehicle lubrication, inspecting fan belt tension, inspecting/rectifying of fuel feed system-carburetor, fuel pump timing, inspecting of sensors and actuators using scan tool, checking of exhaust gas using exhaust gas analyzer emission norm, maintenance schedule of light motor vehicle, fuel saving methods				

INDUSTRIAL CHEMISTRY (IC)

Name of the Course	Course Code	Course Duration	Course Schedules		
			Jul 2022 – Sep 2022	Oct 2022 - Dec 2022	Jan 2023 - Mar 2023
WATER ANALYSIS	221401	1 week	08-08-2022 to 12-08-2022 05-09-2022 to 09-09-2022	10-10-2022 to 14-10-2022 05-12-2022 to 09-12-2022	06-02-2023 to 10-02-2023 27-02-2023 to 03-03-2023
Course Contents	Principle of various instrumental techniques, sampling, precautions, directions for collecting samples of water, Understanding crucial parameters of water analysis such as Color, Odor, turbidity, suspended solids, dissolved solids, conductance, and TDS (total dissolved solids), theory of hardness, the BOD and COD Practical determination of following physical and chemical parameters of water: pH acidity conductance total & mineral acidity by using acidimetric alkalinity total & alkalinity to phenolphthalein temporary, permanent and total hardness of water.				
SPECTROPHOTOMETRIC METHOD OF ANALYSIS	221402	1 week	19-09-2022 to 23-09-2022	24-10-2022 to 28-10-2022 12-12-2022 to 16-12-2022	13-03-2023 to 17-03-2023 27-03-2023 to 31-03-2023
Course Contents	Theory awareness discussion on various methods of analysis such as traditional and instrumental method of analysis, status of spectrophotometer in the field of analysis, introduction, principle, absorption and emission spectrum molecular interaction Beer and Lambert's law, instrumentation, industrial applications of polarimetry, colorimetric, spectrophotometer nephelometry, flame photometry and fluorometry, preparation of calibration graph from known sample to determine the concentration, preparation of various solutions for spectrophotometer like aqueous solutions dyes, metallic compounds, preparation of solutions of various concentrations by using analytical balances				

JAGUAR PLUMBING LAB (JPL)

Name of the Course	Course Code	Course Duration	Course Schedules		
			Jul 2022 – Sep 2022	Oct 2022 - Dec 2022	Jan 2023 - Mar 2023
BASIC COURSE ON PLUMBING	221501	2 weeks	29-08-2022 to 09-09-2022	03-10-2022 to 14-10-2022 31-10-2022 to 11-11-2022 28-11-2022 to 09-12-2022	02-01-2023 to 13-01-2023 30-01-2023 to 10-02-2023 27-02-2023 to 10-03-2023
Course Contents	Knowledge and Skills necessary to assemble, install and repair pipes, fittings and fixtures of heating, water and drainage systems, pipe fittings, and pipes composed of metals and nonmetals; join pipes; caulk joints; -install and repair plumbing fixtures such as sinks, bathtubs, water heaters, hot water tanks, repair and maintain plumbing.				



Electrical Control Maintenance (ELM)



Electronic Control Maintenance (ECM)



Process Control Instrumentation (PCI)



Production Technology (PT)



Machine Tool Maintenance (MTM)



Hydraulic & Pneumatic Controls (HPC)



Metrology & Engineering Inspection (MEI)



Heat Treatment & Material Testing (HT & MT)



CNC Centre



CAD / CAM



Heat Engines (HE)



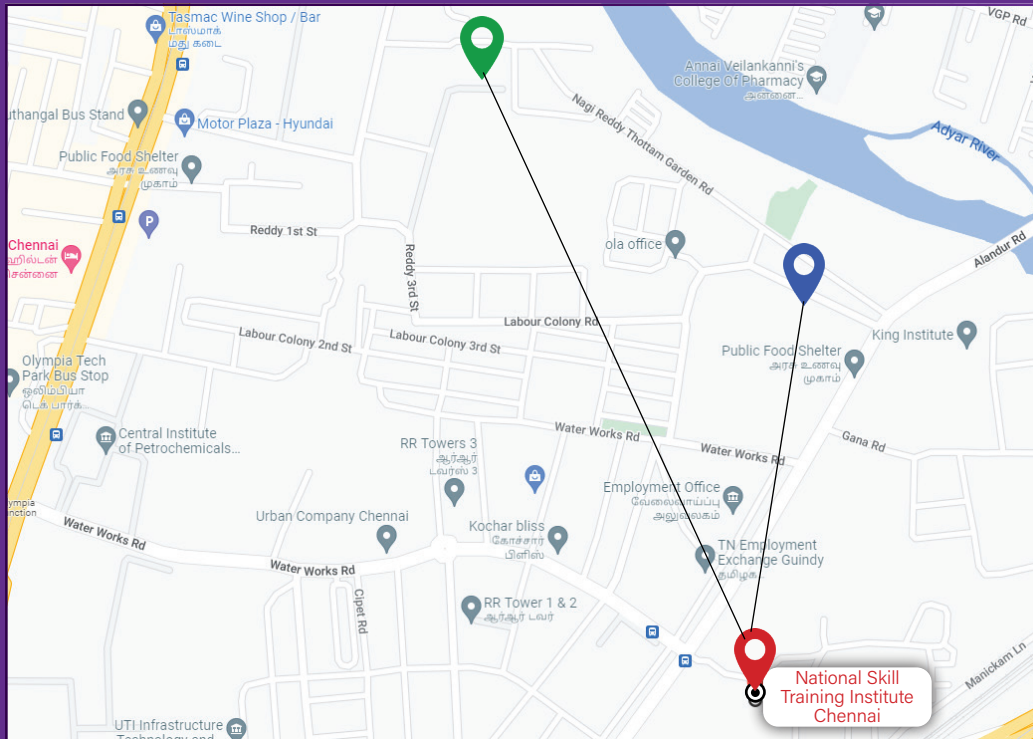
Industrial Chemistry (IC)

NOTE

- The Regional Director/Principal reserves the right to cancel or postpone a scheduled course without assigning any reason.
- In the event of any closed or declared holiday, the course will commence on the next working day and conclude on the last working day of the schedule.

ROUTE MAP

National Skill Training Institute Guindy, Chennai - 600 032
Institute & Hostel Campus



- Hostel Campus I (AVTS)
- Hostel Campus II (CITS)
- Main Campus

Please Log on: www.nstichennai.dgt.gov.in
For further details : 9448105633 / 9444632551

For Registration



<https://forms.gle/3MLHM4YcsrnHU4hy5>

ADDRESS FOR CORRESPONDENCE

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