



D.O. No. MSDE(DGT)-04/01/2018-CD

22<sup>nd</sup> June, 2018

Dear Sir / Madam,

The Digital India programme is a flagship programme of the Government of India with a vision to transform India into a digitally empowered society and knowledge economy. The new skill sets that are emerging around technological developments in digital space, are expected to be in high demand globally in near future. Hence it would be imperative to prepare individuals to acquire corresponding skills for these future opportunities.

2. To ensure availability of trained manpower in new emerging areas of IT & ITES sectors, Directorate General of Training, M/o Skill Development & Entrepreneurship and National Association of Software Services Companies (NASSCOM) has signed MoU on 27<sup>th</sup> April, 2018. NASSCOM is now advising DGT on future of jobs in IT-ITES sector. Some areas identified by NASSCOM for introduction of training programme in ITIs, to address the futuristic need of the Industry (Industry 4.0) are as under

- I. IoT Technician (Smart Agriculture) - The candidate will learn about smart precision agriculture, green house, drone and livestock monitoring.
- II. IoT Technician (Healthcare) - The candidate will learn patient health monitoring system (PHMS), ECG, EMG, Heart rate, EEG, SPO2, tele health, remote health monitoring, robotics system
- III. IoT Technician (Smart City) - The candidate will learn smart city, smart lighting, smart parking, water and waste management, smart traffic and environment (pollution) etc.
- IV. Smartphone testing Technician - The candidate will learn about identifying the defects and rectify the Smartphone along with app testing.

3. Further, recently we have introduced following two trades under Craftsmen Training Scheme (CTS) in new emerging areas, to start training programme in ITIs from session starting from August, 2018.

- I. Technician Mechatronics
- II. Solar Technician (Electrical)

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4. The detailed outline of these courses is enclosed. The above courses are proposed to be introduced under CTS implemented through ITIs from session starting from August, 2018. Huge demand of skilled manpower in above areas would be forthcoming and therefore, your institutes need to be ready to run these training courses from ensuing session itself.

5. In view of above, it is requested that you may kindly take necessary steps to start above training courses specially in government ITIs in the State after creating necessary infrastructure facilities as per NCVT norms. This would help the youth of your State to acquire necessary skills and be future ready.

*Regards,*

Yours sincerely,



(Rajesh Agrawal)

To,

All Principal Secretaries / Secretaries of States/ UTs. (As per list attached)

Encl: as above

# INTERNET OF THINGS

1. *Internet of Things (Smart Agriculture)*
2. *Internet of Things (Healthcare)*
3. *Internet of Things (Smart City)*

## Common Learning Outcomes of 1<sup>st</sup> Semester for all three trades

1. Select and perform electrical/ electronic measurement of meters and instruments.
2. Test various electronic components using proper measuring instruments and compare the data using standard parameter.
3. Identify, place, solder and de-solder and test different SMD discrete components and ICs package with due care and following safety norms using proper tools/setup.
4. Construct, test and verify the input/ output characteristics of various analog circuits.
5. Assemble simple electronic power supply circuit and test for functioning.
6. Assemble, test and troubleshoot various digital circuits.
7. Install, configure, interconnect given computer system(s) and networking to demonstrate & utilize application packages for different applications.
8. Develop troubleshooting skills in various standard electronic circuits using Electronic simulation software.
9. Construct and test different circuits using operational amplifier & ICs 555 linear integrated circuits and execute the result.
10. Apply the principle of sensors and transducers for various IoT applications.
11. Explore the need of different signal conditioning and converter circuits.
12. Identify, Test and troubleshoot the various families of Microcontroller.  
Plan and Interface input and output devices to evaluate performance with Microcontroller

## SEMESTER-II (INTERNET OF THINGS (SMART AGRICULTURE))

1. Identify different IoT Applications with IoT architecture.
2. Identify and Select various types of sensors used in Smart Agriculture.
3. Position the appropriate sensors and collect the information required in Smart Agriculture.
4. Identify, select different wireless communication modules and topology to generate and record the data.
5. Solar Panel Basics Testing, Characteristics, Charge Controller Circuit.

6. Installation, configuration and working of IOT devices, network, database, app and web services.
7. Identify and install the devices used in green house.
8. Monitor soil moisture, temperature etc. for controlling irrigation & record data.
9. Select plant health monitoring system and apply proper water, fertilizer and pesticides.
10. Identify and install the appropriate device for livestock monitoring.
11. Identify, select, install and troubleshoot the components of drones.
12. Data collection using of Drones.

#### **SEMESTER-II (INTERNET OF THINGS (SMART HEALTHCARE))**

1. Identify different IoT Applications with IoT architecture
2. Identify and Select various types of sensors used in Healthcare
3. Position the appropriate sensors and collect the information required in Healthcare.
4. Identify, select different wireless communication modules and topology to generate and record the data.
5. Demonstrate Installation, configuration and working of IOT devices, network, database, app and web services
6. Monitor health parameters like Blood Pressure, ECG, EMG, Heart rate, EEG, SPO2 etc. by suitable sensors ( PHMS )
7. Apply the sensor output data for further computing, analyzing and visualisation.
8. Remote health monitoring and Tele-health
9. Identify, select different Robots used in healthcare.

#### **SEMESTER-II (INTERNET OF THINGS (SMART CITY))**

1. Identify different IoT Applications with IoT architecture
2. Identify and Select various types of sensors used in Smart city
3. Position the appropriate sensors and collect the information required in Smart City.
4. Identify, select different wireless communication modules and topology to generate and record the data.
5. Solar Panel Basics Testing, Characteristics, Charge Controller Circuit.
6. Installation, configuration and working of IoT devices, network, database, app and web services.
7. Monitor environmental parameters like Temperature, Humidity, Air Quality, PM2.5, PM10, CO<sub>2</sub> etc...
8. Explore and troubleshoot different circuits used in SMART Street Light,
9. Explore and troubleshoot different circuits used in SMART Parking
10. Explore and troubleshoot different circuits used in SMART Traffic
11. IoT Application for Water & Waste Management