## OVERVIEW :

This workshop aims to provide the participants with the focus set to reflect the latest research on advance issue in Robotics and Automation. In last decade the research on robotics has been strongly focused on development of automation.

## COURSE OBJECTIVES :
>To understand the basic concepts associated with the design, functioning and applications of Robots
>To study about the robotic control
>To learn about analyzing Robot Kinematics and Robot Programming

## COURSE OUTCOMES :
>Able to understand the robotics system in depth and its applications.
>Able to understand kinematics and Dynamics of Robots.
>Able to understand the controlling part of Robot.
>Able to learn programming of Arduino using Proteus Software.
>Able to understand about Robotic Vision and working of Mobile robots.

## COURSE CONTENTS :
>Introduction to Robotics and Automation.
>Kinematics and Dynamics of Robot.
>Robotic Control
>Simulation session on arduino uno.
>Robotic Vision and working of Mobile robots.
>Career Opportunities

## About the Organization



DR. AMBEDKAR INSTITUTE OF TECHNOLOGY is managed by Panchajanya Vidya Peetha Welfare Trust (Regd.) was established by late Sri. M .H. Jayaprakash Narayan in 1979. The institute is affiliated to Visvesvaraya Technological University (VTU), Belagavi and is Accredited by AICTE. The institute has been accredited by NAAC with 'A' grade and is mentee institute for Institution of Engineering & Technology, Dr. Ram Manohar Lohia Avad University, Faizabad, Uttar Pradesh. most of the programmes are accredited by NBA. A part from 10 disciplines of Engineering, The institute also offers MCA, MBA and M.Tech. programs in various specializations. The institute is one among the 14 colleges selected for receiving the world bank assistance under the technical education quality improvement programme (TEQIP-III) through the government of India.

## ABOUT THE DEPARTMENT

The Dept. of Electronics and Communication Engineering came into grant-in-aid of Government of Karnataka in 1992. The UG course has been started in the year 1982 with an intake of 60 and presently UG program intake is 180. The PG course M.Tech in VLSI Design and Embedded Systems was started in 2003-2004 with an intake of 18. Staffs are highly qualified and also the members of prestigious professional bodies like IEEE, ISTE, SSI AND CSI. IEEE student chapter has been setup. Students have participated and won prizes in intercollegiate technical activities.

## DR. AMBEDKAR INSTITUTE OF TECHNOLOGY

An Autonomous Institution, Aided by Govt of Karnataka, Affiliated to VTU, Belagavi



**One Week Workshop**
on
"**Robotics and Automation**"
from
**08-08-2022 to 13-08-2022**

**Sponsored by**

**Karnataka Science and Technology Academy**



ORGANIZED BY
DEPT. OF ELECTRONICS AND COMMUNICATION ENGINEERING

## CHIEF PATRONS:

**Sri Mariswamy S.,**
Hon. Chairman, P.V.P Welfare Trust, Bengaluru.

**Sri A R Krishnamurthy,**
Hon. Managing. Secretary, P.V.P Welfare Trust, Bengaluru

**Dr. B N Umesh**,
Hon. Treasurer, P.V.P Welfare Trust, Bengaluru.

**Sri S. Shivamallu**,
Hon. Trustee, P.V.P Welfare Trust, Bengaluru.

**Dr. M. Mahadeva**
Hon. Trustee, P.V.P Welfare Trust, Bengaluru

**Dr. M Meenakshi,**
Principal, Dr A.I.T, Bengaluru.

**Dr. K N Anuradha,**
Dean (A), Dr A.I.T, Bengaluru

**Vision**
To excel in education and research in Electronics and Communication Engineering and its related areas through its integrated activities.

**Mission**
- To provide students a strong foundation in Electronics and Communication Engineering.
- To provide high quality technical education in Electronics and Communication Engineering discipline and its related areas to meet the growing needs and challenges of industry and society.
- To be a contributor to technology through the process of skill development, value based education, research and innovation

## Chief Coordinator:

**Dr. S Ramesh**
Prof. and HOD, Dept. of ECE
Dr A.I.T, Bengaluru.

## Coordinators:

**Mrs. Mala Sinnoor, Asst. Professor,**
**Email: malasinnoor.ec@drait.edu.in**
**Mrs. Vidyashree C, Asst. Professor,**
**Email: vidyashreec.ec@drait.edu.in**
**Ms.Spoorthi P A,** Asst. Professor,
Email: spoorthi.pa.ec@drait.edu.in
Dept. of ECE, Dr A.I.T, Bengaluru

**Contact number: 9035286400**

**Registration Link:**
**https://forms.gle/GEiQb2w5rRQ23oMg7**

### One Week Workshop
on
### "Robotics and Automation"
from
**08-08-2022 to 13-08-2022**

Name: ……………………………………………
Designation …………………………………….....
Department ………………………………………..
Institution ………………………………….,………

e-mail id ..……………………………………….….
Mobile Number ……………………………………

Address ………………………………….................
…..………………………….…………………..…..

**Declaration :**
I declare that all the details furnished above are true to the best of my knowledge and I agree to abide by the rules and regulations governing the conduct One Week Workshop on "Robotics and Automation".

Date :
Place :                    Signature of the Applicant

**Authorization Certificate :**
This is to certify that _____ is a regular Student /Research Scholar of our institutions and is hereby permitted to attend One Week Workshop on "Robotics and Automation" at Dept. of ECE, Dr.AIT. Bengaluru..
Date :
Place :

Signature of the HOD/ Principal with seal.

# Dr. Ambedkar Institute of Technology

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INSTITUTION'S
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**Report on Karnataka Science and Technology Academy (KSTA),Govt. of Karnataka, Sponsored an Online Five Days Workshop Program on "Robotics and Automation" from 8th August 2022 to 13th August 2022, Organized by the Department of Electronics and Communication, Dr. Ambedkar Institute of Technology, Bengaluru.**

The Department of Electronics and Communication Engineering, Dr. Ambedkar Institute of Technology has organized Karnataka Science and Technology Academy (KSTA) sponsored online five days workshop Program on "Robotics and Automation" on 8th August 2022 to 13th August 2022.

Professor and Head of the Department ECE, Dr. S Ramesh, along with the Chief Convenor Dr.M.Meenakshi , Principal, Dr. AIT ,along with  Conveners  Dr.M.V Vijaykumar, Vice -Principal and  Dr.K N Anuradha, Dean (Academic)  and  Coordination of Mala Sinnoor, Assistant Professor, Vidyashree C, Assistant  Professor  and Spoorthi P A, Assistant Professor, Dept. of ECE, Dr A.I.T, Bengaluru, has inaugurated the event at 9.30 AM in ECE Seminar Hall with the inspirational thoughts and practical experiences.

**Total number of participants for the workshop was 76**

| Participants | No. of participants from Karnataka |
|---|---|
| Female students | 25 |
| Male students | 48 |
| Total | 73 |

**Online Five Days Workshop Program on "Robotics and Automation" Sponsored by Karnataka Science and Technology Academy (KSTA),Govt. of  Karnataka.**

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## Category wise participants for the Workshop

| Category | Number of Participants |
|---|---|
| General | 16 |
| OBC | 52 |
| SC | 04 |
| ST | 1 |
| Others | 0 |
| Total | 73 |

## Day 1 Session 1 (10. 00am to 12.00pm):

Session 1 of the first day started at 10.00am on 08/08/2022 in ECE seminar hall and was presented by Dr.Karthikeyan M, Head and Professor, Department of Robotics and Automation,Rajarajeshwari College of Engineering, Bengaluru. The Session was started with a brief introduction of Robotics & Automation.With this overview he went on explaining Robotics. There were many topics covered during the session like the importance of Robotics,Types of Robots,importance of Robotics in the industry,and explained the importance of this session for the students to gain hands-on experience in the latest trends of Robotics in automotive industries.

**Online Five Days Workshop Program on "Robotics and Automation" Sponsored by Karnataka Science and Technology Academy (KSTA),Govt. of Karnataka.**

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**Online Five Days Workshop Program on "Robotics and Automation" Sponsored by Karnataka Science and Technology Academy (KSTA),Govt. of Karnataka.**
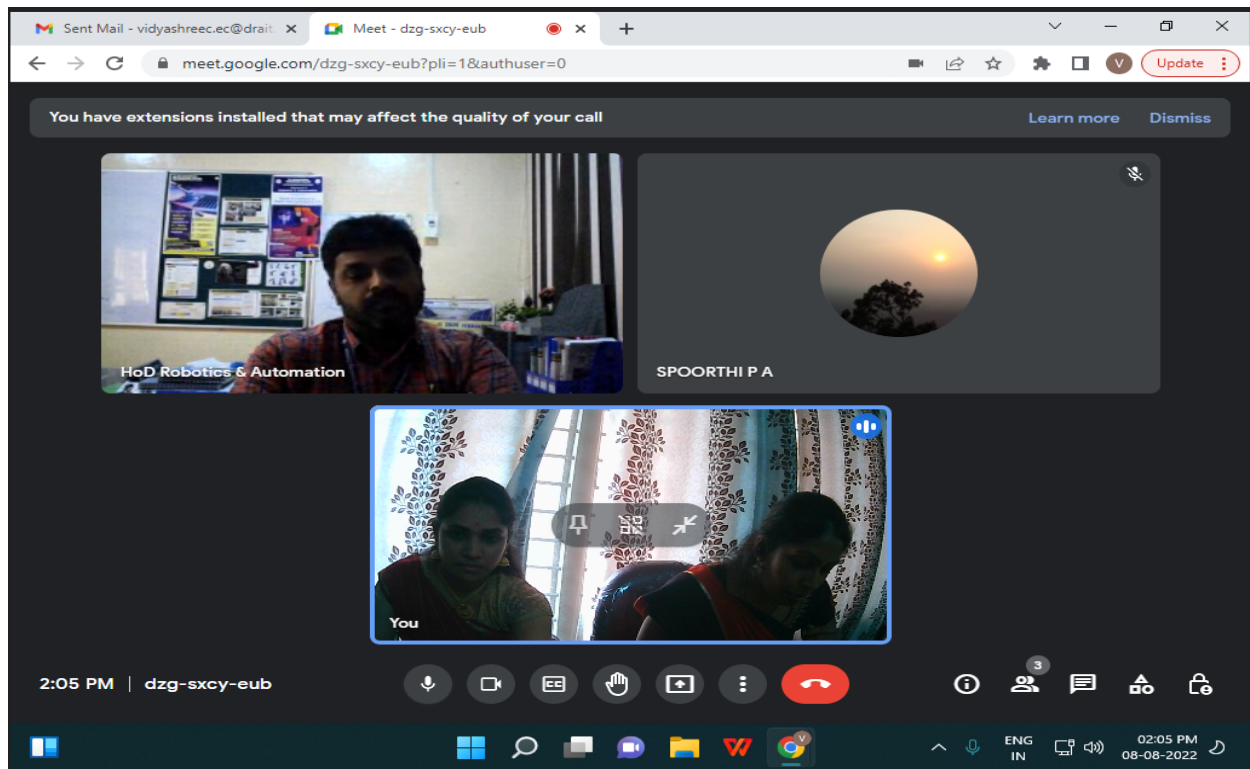
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## Day 1 Session 2 (2.00 pm to 4.00pm):

The Session was started with a brief introduction of Kinematics of Robot by Dr.Murugarajan A,Professor and Head,Department of Robotics and automation,Sree Ramakrishna College of Engineering ,Coimbatore.In briefing about basics of Kinematics of robots ,Kinematics is the study of the relationship between a robot's joint coordinates and its spatial layout, and is a fundamental and classical topic in robotics. Kinematics can yield very accurate calculations in many problems, such as positioning a gripper at a place in space, designing a mechanism that can move a tool from point A to point B, or predicting whether a robot's motion would collide with obstacles.



**Online Five Days Workshop Program on "Robotics and Automation" Sponsored by Karnataka Science and Technology Academy (KSTA),Govt. of Karnataka.**

## Day 2 -Session 3 (10. 00am to 12.00pm):

The Session was started with a brief introduction of Dynamics of Robots by Dr.Murugarajan A,Professor and Head,Department of Robotics and automation,Sree Ramakrishna College of Engineering ,Coimbatore. Various topics covered in this session were Forward Dynamics and Inverse Dynamics .**Robot dynamics** is concerned with the relationship between the forces acting on a robot mechanism and the accelerations they produce. Typically, the robot mechanism is modeled as a rigid-body system, in which case robot dynamics is the application of rigid-body dynamics to robots. The two main problems in robot dynamics are:

- **Forward dynamics**: given the forces, work out the accelerations.
- **Inverse dynamics**: given the accelerations, work out the forces.

Forward dynamics is also known as "direct dynamics," or sometimes simply as "dynamics." It is mainly used for simulation. Inverse dynamics has various uses, including: on-line control of robot motions and forces, trajectory design and optimization, design of robot mechanisms, and as a component in some forward-dynamics algorithms.

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**Online Five Days Workshop Program on "Robotics and Automation" Sponsored by Karnataka Science and Technology Academy (KSTA),Govt. of Karnataka.**

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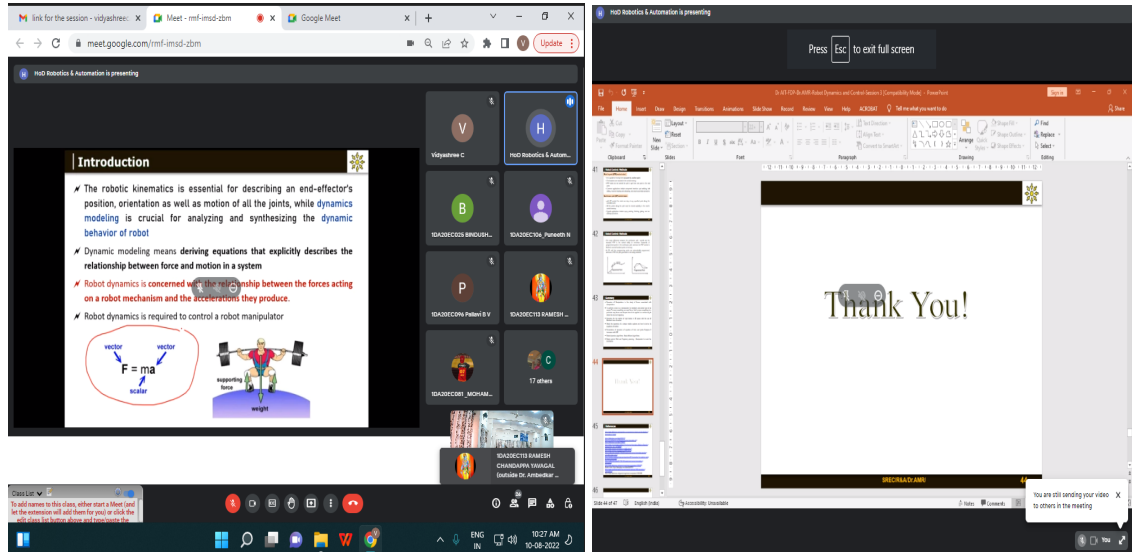
## Day-2 Session 4 (2.00 pm to 4.00pm):

The Session was started with control of Robotics by Sarveswaran S,Assistant professor,Department of Robotics and automation,Sree Ramakrishna College of Engineering ,Coimbatore .

The speaker discussed Robotic **control** as the system that contributes to the movement of robots. This involves the mechanical aspects and programmable systems that make it possible to control robots. Robotics could be controlled in various ways, which includes using manual control, wireless control, semi-autonomous (which is a mix of fully automatic and wireless control), and fully autonomous (which is when it uses artificial intelligence to move on its own, but there could be options to make it manually controlled). In the present day, as technological advancements progress, robots and their methods of control continue to develop and advance.

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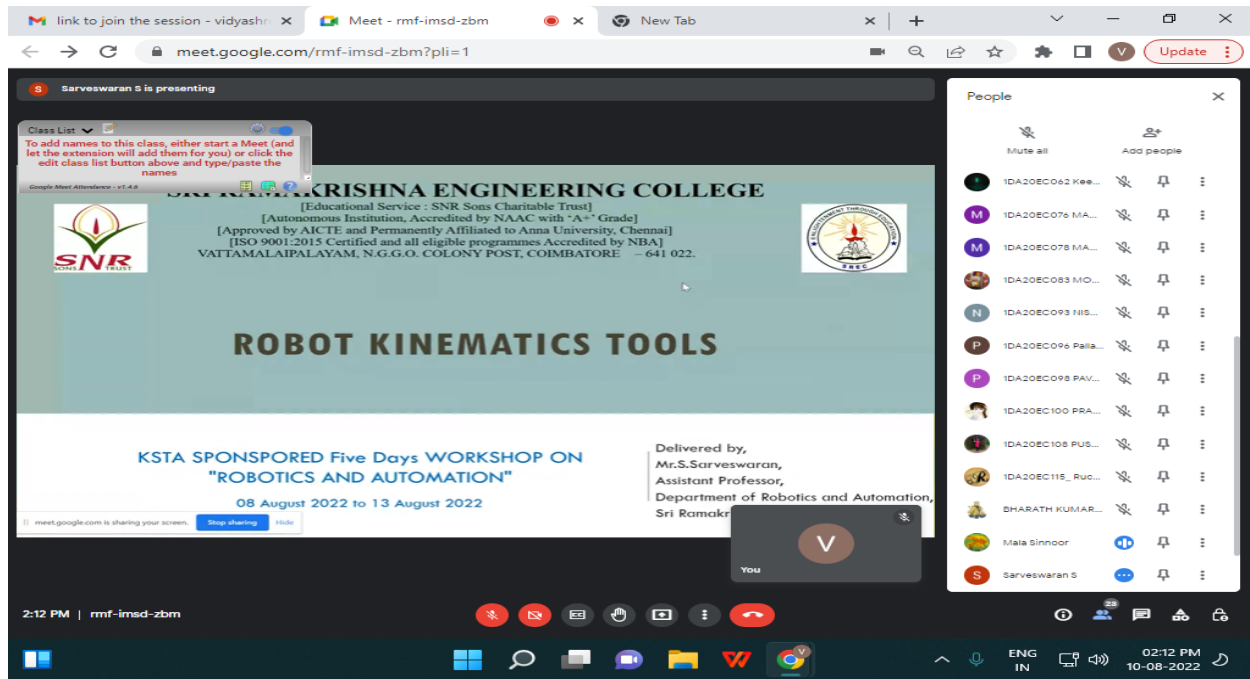
## Day 3 -Session 5 (10. 00am to 12.00pm):

The session was started by Introduction to Arduino Uno by Mr.Panduranga N M,Embedded software engineer at Embiot technologies Pvt.Ltd. **Arduino Uno** is an open-source microcontroller board based on the Microchip ATmega 328P microcontroller and developed by Arduino.cc and initially released in 2010.The board is equipped with sets of digital and analog input/output (I/O) pins that may be interfaced to various expansion boards (shields) and other circuits.[1] The board has 14 digital I/O pins (six capable of PWM output), 6 analog I/O pins, and is programmable with the Arduino IDE (Integrated Development Environment), via a type B USB cable.

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**Online Five Days Workshop Program on "Robotics and Automation" Sponsored by Karnataka Science and Technology Academy (KSTA),Govt. of Karnataka.**

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## Day-3 Session 6 (2.00 pm to 4.00pm):

The afternoon session about Arduino Uno was continued by Mr.Panduranga N M,Embedded software engineer at Embiot technologies Pvt.Ltd.Various components that can be interfaced with arduino Uno was introduced.Sensor record the physical data by changing the voltage at their output pin in response to different physical condition.

Arduino Uno has a set of Analog input pins which can be used to take analog input signals from a sensor.

Remember there are two types of signals:

1. Digital Signals: These signals have only two values i.e. 1 or 0 (on or off).

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2. Analog Signals: These signals have values in a range. In the case of Arduino it scales the value in the range from 0 to 255.

## Day 4-Session 7 (10. 00am to 12.00pm):

The Session was started with a brief introduction of robotic vision by Mr.Girish Baliga,Marketing engineer,Keysight technologies. A robotic vision system is a technology that enables a robot to "see." These systems enable the machine to be able to identify, navigate, inspect or handle parts or tasks.

A robotic vision system consists of one or more cameras connected to a computer. The computer contains a processing software program that helps the robot interpret what it sees. Then, the robot follows the program's instructions—specified by the manufacturing facility's staff—to complete the specified task.

Additional elements, such as lighting, image sensors, communications devices or other components, can be incorporated to add to the machine's overall capabilities.

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## Day-4 Session 8 (2.00 pm to 4.00pm):

The Session was started with an introduction of Mobile Robots by Mr.Girish Baliga,Marketing engineer ,Keysight technologies.A **mobile robot** is an automatic machine that is capable of locomotion. Mobile robotics is usually considered to be a subfield of robotics and information engineering.Mobile robots have the capability to move around in their environment and are not fixed to one physical location. Mobile robots can be "autonomous" (AMR - autonomous mobile robot) which means they are capable of navigating an uncontrolled environment without the need for physical or electro-mechanical guidance devices. Alternatively, mobile robots can rely on guidance devices that allow them to travel a predefined navigation route in relatively controlled space. By contrast, industrial robots are usually more-or-less stationary, consisting of a jointed arm (multi-linked manipulator) and gripper assembly (or end effector), attached to a fixed

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surface.



## Day 5-Session 9(10. 00am to 12.00pm):

The Session was started by giving a brief about career opportunities in the field of Robotics by Mr.Girish Baliga,Marketing engineer ,Keysight technologies.A career in robotics is an incredibly rewarding path for budding engineers. With newer, faster, and more intelligent robots introduced every day, the industry offers several exciting careers for robotics engineers. Become part of the revolution today and join the ever-growing field.From manufacturing and healthcare to agriculture and surveillance, robotics is helping shape a new world.

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**Session 10 -Valedictory : After the last session valedictory was held from 12.00 PM to 1:00PM.**



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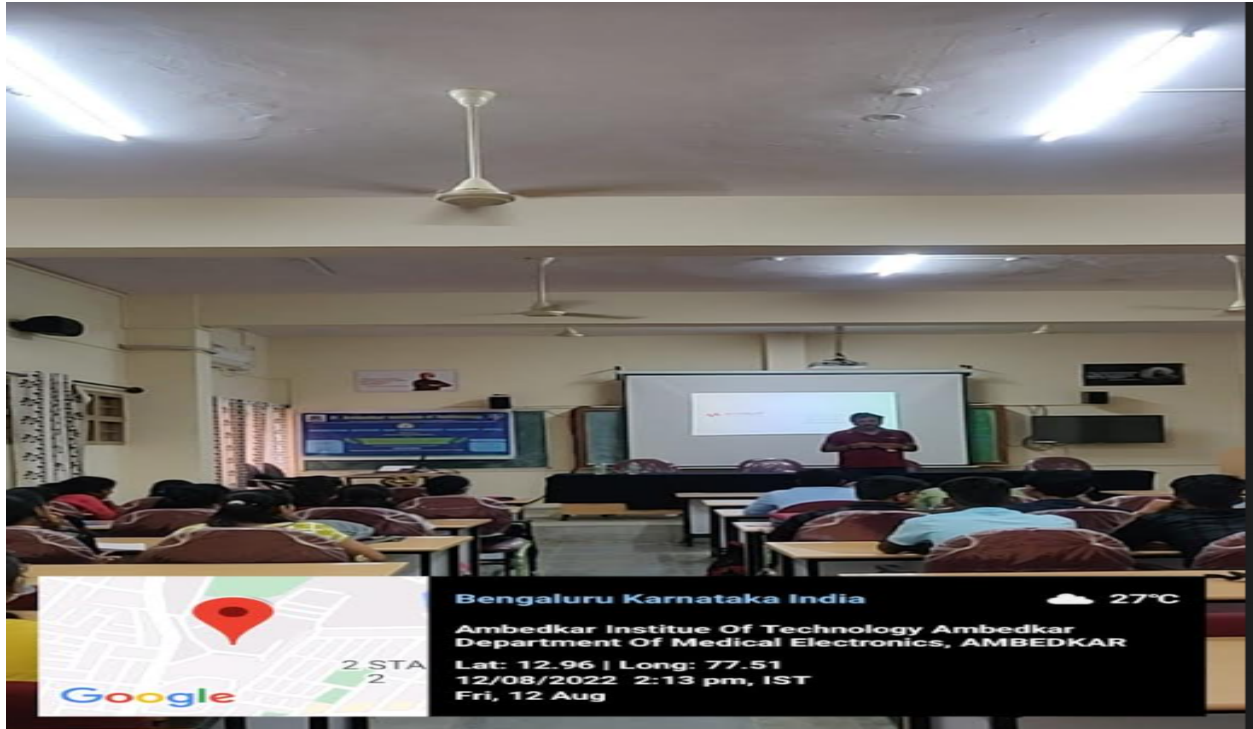**Online Five Days Workshop Program on "Robotics and Automation" Sponsored by Karnataka Science and Technology Academy (KSTA),Govt. of Karnataka.**

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**Online Five Days Workshop Program on "Robotics and Automation" Sponsored by
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## RESOURCE PERSONS

**Dr. M. H. Kori,**
Technology Consultant, Former Technical Director,
Alcatel Lucent Technologies, Immediate Past Chairman
IMAPS India

**Dr. Goutham Simha G D**
Assistant Professor,
dept. Electronics and Communications Engineering, MIT,
Manipal

**Dr. Pallaviram Sure,**
Department of ECE,
Faculty of Engineering And Technology
Ramaiah University of Applied Sciences, Bangalore

**Mr. Kishan Kittur**
Senior Analyst, Application Development, Accenture

**Mr. Naveen Chandra C**
Director, Nawin Gurukula, Senior Network Engineer,
Wipro Infotech

**Dr. Kiran Trivedi,**
Associate Professor,
Shantilal Shah Engineering College, Gujarat, India

## ABOUT THE ORGANIZATION

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&
**Institute of Engineering & Technology**
Dr. Rammanohar Lohia Avadh University. Ayodhya, U.P.

**National Level Five Days Virtual FDP**
on
**"Research Directions in Wireless Communication"**
From 17/08/2020 to 21/08/2020
**Sponsored by**
**ISTE**

Organized by
**Dept. of Electronics And Communication Engineering**

## Chief Convener:
**Dr. C. Nanjundaswamy,**
Principal, Dr A.I.T, Bengaluru

## Convener:
**Dr.Ramapati Mishra,**
Director, IET Ayodhya

## Convener:
**Dr. Siddaraju,**
Dean (A), Dr A.I.T, Bengaluru

## ISTE Coordinator:
**Dr. S.Vasudev Murthy**
EEE department,
Dr A.I.T, Bengaluru

## Chief Coordinator:
**Dr. S Ramesh**
Prof. and Head of the Dept. of ECE
Dr A.I.T, Bengaluru

## Coordinators:
**B S Sudha,** Associate Professor
**Dr. Tanuja P,** Assistant Professor
**Mala Sinnoor,** Assistant Professor
**Triveni,** Assistant Professor
**Ripal Patel,** Assistant Professor
Dept. of ECE, Dr A.I.T, Bengaluru.

**Vision**
To excel in education and research in Electronics and Communication Engineering and its related areas through its integrated activities.

**Mission**
- To provide students a strong foundation in Electronics and Communication Engineering.

- To provide high quality technical education in Electronics and Communication Engineering discipline and its related areas to meet the growing needs and challenges of industry and society.

- To be a contributor to technology through the process of skill development, value based education, research and innovation.

## About the FDP

Wireless communication plays a crucial role in day to day life. Besides communication, wireless technology has become a significant part of our daily activities. The transmission of data or information from one place to another wirelessly is referred as wireless communication. This provides an exchange of data without any conductor through RF and radio signals.

## For Contact:

Email: malasinnoor@dr-ait.org
Email: ripal.patel@dr-ait.org

## Overview of FDP

This FDP aims to provide the participants with the focus set of research directions to reflect the latest research results on advance issue in wireless communication. In last decade the research on wireless communication has been strongly focused on development of 5G, MIMO technologies and Cognitive radio network. 5G wireless communications expect to bring both high spectrum efficiency and high energy efficiency. By activating a subset of certain communication building blocks, such as antenna, subcarrier, and time slot, index modulation is claimed to have the potential to meet the challenging 5G needs. With the use of MIMO, better system capacity performance and user experience can be achieved.

**Registration Fee :** Rs 100/-

**Google pay mobile number:** 7600128687

**Registration Link:**
https://forms.gle/v2DYjApRYiyiVuEm6

**Last date for registration:**
On or before 16h August 2020.

E-Certificate will be issued to the regular Attendees of the FDP after submission of feedback.

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**Report on National Level Five days virtual FDP on "Research Directions in Wireless Communication" from 17/08/2020 to 21/08/2020 Sponsored by ISTE, organized by Dr. Ambedkar Institute of Technology, Bengaluru.**

The Department of Electronics and Communication Engineering in association withInstitute of Engineering & Technology, Dr. RammanoharLohiaAvadh University. Ayodhya, U.P., has organized National Level Five days virtual FDP on "Research Directions in Wireless Communication" in Dr. Ambedkar Institute of Technology, Bengalurufrom 17/08/2020 to 21/08/2020 Sponsored by ISTE.

The Head of the Department, Dr. S Ramesh, Professor in ECE Department, along with the Coordination of B S Sudha, Associate Professor, Dr.Tanuja P, Assistant Professor, Mala Sinnoor, Assistant Professor, Triveni, Assistant Professor, Ripal Patel, Assistant Professor, Dept. of ECE, Dr A.I.T, Bengaluru, has inaugurated the event at 10 AM in ECE Seminar Hall with the inspirational thoughts and practical experiences.

Total number of participants for the FDP was 75

| | No. of participants from Karnataka | No. of participants outside Karnataka |
|---|---|---|
| Female Participants | **50** | 12 |
| Male Participants | 25 | 10 |
| Researcher | 30 | 18 |

# Report of DAY 1

**Day one session started at 10.30am 0n 17/08/2020 in ECE seminar hall. The first day session was presented by Dr. M. H. Kori,** Technology Consultant, Former Technical Director, Alcatel Lucent Technologies, Immediate Past Chairman IMAPS India.

The Session was started with brief introduction on Research direction in Wireless Communication. There were many topics covered during the session like Global Wireless Standards for WAN, MAN, LAN and PAN, Wireless Technologies in walkie-talkie, LOS/NLOS/ Troposcatter, VHF/UHF/Microwave, NFC, Body Communications. And later he briefed what are different Wirelessstandard. He also briefed on the evolution of Wireless and Mobile communication. Later he went on explaining Mobilecellular like 3G-Full-fledged WCDMA, HSDPA, WIMAX, 4G-LTE implemented and Technologies for 5G and beyond.

The three Principle dimensions in 5G- eMBB, mMTC and URLLC were discussed in detail and the challenges in research of 5G and mobile communication were also discussed with the participants.

**Report on National Level Five days virtual FDP on "Research Directions in Wireless Communication" from 17/08/2020 to 21/08/2020 Sponsored by ISTE, organized by Dr. Ambedkar Institute of Technology, Bengaluru.**

# Report of DAY 2

Day two session started at 10.30am 0n 18/08/2020 in ECE seminar hall. The second day session was presented by Dr. Goutham Simha G D, Assistant Professor, Department of ECE, MIT, Manipal, Karnataka.

The session was started with basic concept and recent development of SM-MIMO and IM-OFDM. Different from the approach therein, presenter aim to establish a unifying framework for general IM techniques, and provide indepth discussions on the SE and EE issues. Note that both SM-MIMO and IM-OFDM end up using less medium resources relative to traditional MIMO-OFDM, in that only a subset of transmit antennas or frequency subcarriers are activated. Nevertheless, they tend to achieve more EE and SE that are urged by 5G.

**<u>Report on National Level Five days virtual FDP on "Research Directions in Wireless Communication" from 17/08/2020 to 21/08/2020 Sponsored by ISTE, organized by Dr. Ambedkar Institute of Technology, Bengaluru.</u>**

# Report of DAY 3

Day three session started at 10.30am 0n 19/08/2020 in ECE seminar hall. The third day session was presented by Dr. Pallaviram Sure, Faculty of ECE, Ramaiah University of Applied Science, Bangalore, Karnataka

The session was started with how next-generation cellular systems will enable advanced data analysis techniques to achieve efficient service quality management and network automation. The Bayesian Network (BN) is used for the reliability prediction of throughput. The forecast is to predict future test results through parameter estimation. In the studied Bayesian network learning stage, the load of the base station, user location and moving speed all affect the user's received signal-to noise ratio (SNR) and signal interference plus noise ratio (SINR). The test result is the probability or number of times that throughput of a low-speed mobile user satisfies the threshold. The speaker also showed simulation results that the model can well infer the user's throughput under low speed movement conditions.

**<u>Report on National Level Five days virtual FDP on "Research Directions in Wireless Communication" from 17/08/2020 to 21/08/2020 Sponsored by ISTE, organized by Dr. Ambedkar Institute of Technology, Bengaluru.</u>**

# Report of DAY 4

Day fourth session started at 10.30am 0n 20/08/2020 in ECE seminar hall. The fourth day session was presented by Mr. Kishan Kittur, Senior Analyst, Accenture, Bangalore, Karnataka and Mr. Navven Chandra, Network Engineer, Wipro, Bangalore, Karnataka

The session started with DevOps. Itis a combination of software development and information technology operations that enables businesses to deliver applications at a faster pace. It brings together development and operations teams so there are fewer redundancies in the software development process. There was a growing divide between the product's creation and its support before the world of DevOps. The silos led to delays in production. Even after Agile methodology got customers, developers, managers, and QA working together, operations, and infrastructure wasn't addressed. The product's delivery and infrastructure can be seen as an extension of Agile when looking at DevOps.

Cisco security innovations provide highly secure firewall, web, and email services while helping to enable mobility and teleworking. Advanced Malware Protection (AMP),Cloud Security, Email Security,Endpoint Security,Firewalls,Network Security,Network Visibility and Segmentation.. Stop threats faster The network is the most powerful foundation for an organization's security.Cisco Stealthwatch Enterprise and Cisco ISE work together with the network to provide powerful, highly secure access; automated threat detection; and software-defined segmentation.

# Report of DAY 5

Day fifth session started at 10.30am 0n 21/08/2020 in ECE seminar hall. The fourth day session was presented by  Dr. Kran Trivedi, Associate Professor, Shantilal Shah Engineering College, Gujrath, India

The session started with employment of machine learning in the compelling applications of 5G networks, including cognitive radios, massive MIMOs, femto/small cells, heterogeneous networks, smart grid, energy harvesting, device-to-device communications. Besides, Narrow Band-Internet of Things (NB-IoT) is an emerging cellular-based radio access technology, which offers a range of flexible configurations for different coverage enhancement (CE) groups to provide reliable uplink connections for massive IoT devices with diverse data traffic. To optimize the number of served IoT devices, the uplink resource configurations need to be adjusted in real-time according to the dynamic traffic, this brings the challenge of how to select the configurations at the Evolved Node B (eNB) in the multiple CE groups scenario with high-dimension and interdependency.

## ABOUT THE INSTITUTE
### Department of E&CE.
### Dr. Ambedkar Institute of Technology

Dr.Ambedkar Institute of Technology (Dr.AIT) is managed by Panchajanya Vidya Peeta Welfare Trust. The trust is managing a number of educational institutions in Bengaluru.

Dr. AIT was established in 1980 by Late Sri. M.H. Jayaprakash Narayan, our Institute is one among the 7 colleges selected in Karnataka for receiving the World Bank Assistance under Technical Education Quality Improvement Program (TEQIP-III) through Government of India. The Institute is the recipient of several grants sanctioned by AICTE, DST and VTU. The Institute is granted autonomous status by UGC WEF 2010-11.The institute is accredited by NBA, NAAC and certified by ISO.

### ABOUT THE DEPARTMENT

The department came under grant-in-aid scheme of Government of Karnataka in 1992. The PG course M.Tech in VLSI Design and Embedded System was started in 2003-2004 with the intake of 18 and UG courses have been started in the year 1982 with an intake of 60 and presently UG program intake is 180.

Faculties are highly qualified and are also the members of prestigious professional bodies like IEEE, ISTE, SSI, and CSI. IEEE Students Chapter has been setup. Students have participated and won prizes in intercollegiate technical activities.

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## ONE WEEKS WORKSHOP
## On
## "Advances in Signal Processing and Robotics"
### Under TEQUIP-III (1.3)

### 27/08/2018 To 01/09/2018

### REGISTRATION FORM

**Name:**

**Designation:**

**Department:**

**Institution:**

**Mailing address:**

**Phone:**

**E-mail ID:**

### Declaration

I hereby declare that the information furnished above is true to the best of my knowledge.

**Signature of the Applicant with date.**

**Signature of Principal/ HOD**.

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### Dr. AMBEDKAR INSTITUTE OF TECHNOLOGY
### ಡಾ॥ ಅಂಬೇಡ್ಕರ್ ತಾಂತ್ರಿಕ ಮಹಾವಿದ್ಯಾಲಯ

## Sponsored by: TEQIP-III (1.3)

### Department Of
### Electronics and Communication
### Engineering

### ONE WEEK WORKSHOP ON

## "ADVANCES IN SIGNAL PROCESSING AND ROBOTICS"

### 27th Aug. – 1st Sept. 2018

Li2-Innovations
Lead·Innovate·Implement

EdGate
TECHNOLOGIES

Organized by:
Department of ECE,
Dr. Ambedkar Institute of Technology,
Bengaluru -560056.

## OBJECTIVES OF WORKSHOP

The aim of the workshop is to create awareness of interdisciplinary emerging fields of electronics and communication. The innovation in the field of image processing, speech processing, 3D printing, and robotics to strengthen the Institute & Industry relationship. The participants will familiar with the usage of MATLAB & Simulink for designing and modeling DSP using TMS320c6713.

## OUTCOME OF WORKSHOP

❖ The workshop will identify future research needs in this interdisciplinary emerging field.
❖ To provide deep insight into Image and Audio Processing.
❖ To provide a forum for participants to identify the real world challenges and development of Robots with the scope to solve it.
❖ To provide information about future research scope and possibilities of 3D printing.
❖ To increase the visual modality of students towards the education and improve the skills needed to become a Robotic and Automation Expert.

## WORKSHOP CONTENTS

❖ MATLAB interface of C6713 for audio processing and image processing.
❖ Design and Manufacturing of 3D printers (Brahma3 - Demo) and 3D CAD design for Additive Manufacturing.
❖ Rapid Prototyping using FDM and Laser cutting process.
❖ IoT, Robotics and Chatbots and AI (Demo: Google Assistant).

## CHIEF PATRONS

1. **Sri. S. Mariswamy**,
   Honorable Chairman,
   PVP Welfare Trust. Bengaluru.
2. **Sri.A.R. KrishnaMurthy**,
   Secretary/Managing trustee, PVP Welfare Trust. Bengaluru.
3. **Sri. P.L. Nanjundaswamy,**
   Treasurer, PVP Welfare Trust. Bengaluru.
4. **Shri. S. Shivamallu,**
   Trustee, PVP Welfare Trust. Bengaluru.
5. **Shri. Dr. M.Mahadeva**,
   Trustee, PVP Welfare Trust. Bengaluru.
6. **Shri. Dr. C. Nanjundaswamy,**
   Principal, Dr. Ambedkar Institute of Technology, Bengaluru.

## PATRONS

**Dr. M.N.Hegde,** Dean (Academic), Dr.AIT.
**Dr. B Ravindra,** Coordinator,**TEQIPIII**

## RESOURCE PERSON

**Mr Subham Banerjee,** Research Manager **IISc**. Bengaluru.
**Li2 Innovations Pvt. Ltd. Bengaluru.**
**EdGate Technologies Pvt Ltd, Bengaluru.**

## CHIEF COORDINATOR

**Dr. G.V.Jayaramiah, Prof. & HOD**
Dept. of ECE, Dr.AIT, Bengaluru.

## COORDINATORS

**Dr. Mahalinga V Mandi** , Professor.
**Mrs. Nagarathna H S**, Assistant Professor.

## ORGANIZING COMMITTEE

**Dr. Ramesh S,** Professor.
**Dr. H. Umadevi ,** Professor.
**Meenakshi L Rathod,** Assistant Professor.
**Girija S,** Assistant Professor.
**Hemalatha K N,** Assistant Professor.

## VENUE

**Silver Jubilee Seminar Hall**
**Dr.AIT, Bengaluru-56**

## LAST DATE FOR REGISTRATION
25/08/2018

## REGISTRATION FEE

Faculties from Non TEQIP Institutions: Rs. 750/-
Faculties from TEQIP Institutions: Rs 1,000/-
Number of participants: Limited to 50
Selection: First come first served basis (Only for Assistant Professor)

## Who Can Attend the Workshop?

Workshop mainly focuses on Assistant Professors of Elcectronics, Electrical and Mechanical streams of Engineering and Polytechnic colleges.

## Address for Communication

**Dr. Mahalinga V Mandi** , Professor.
mvmandi@gmail.com: 9448800637
nagarathnhs@gmail.com:9731736388

अभियांत्रिकी एवं प्रौद्योगिकी संस्थान
डॉ. राममनोहर लोहिया अवध विश्वविद्यालय, फैजाबाद (उ.प्र.)

दूरभाष – 05278 – 247686
मो.    –      9415188766
फैक्स  – 05278 – 248123
ई–मेल- directorietfzd@gmail.com

## INSTITUTE OF ENGINEERING & TECHNOLOGY
### Dr. RAMMANOHAR LOHIA AVADH UNIVERSITY, FAIZABAD (U.P.)

Ref – IET/Twinning/04-2019

Date: 27-03-2019

**Letter of Appreciation**

Prof. Kavita Devi C S
Assistant Professor
Department of Electronics and Communication Engineering,
Dr. Ambedkar Institute of Technology, Bengaluru

Dear Sir/ Madam,

Thank you very much for delivering an informative and thoughtful lecture **"Microwave Engineering- Scattering Matrix, Passive microwave devices and hybrid circuits"** Course for B.Tech ECE 3rd year students and EMFT for ECE 2nd yr. students from 25.03.2019 to 27.03.2019 at our premises.

Your skills in talking about different angles of the subject were highly appreciated by the participants.

I once again thank you for such a wonderful lecture and hope to get a chance to hear such lectures from you in future.

Director
(Prof. Ramapati Mishra)
DIRECTOR
Institute of Engineering & Technology
Dr. R.M.L. Awadh University
Faizabad - 224001

# DR. AMBEDKAR INSTITUTE OF TECHNOLOGY
## NEAR JNANA BAHRATHI CAMPUS: BANGALORE-560056

AIT/TEQIP-III/112/2017-18

DATE: 01.02.2018

## CIRCULAR

As per the discussion during meeting held on 30.01.2018 in the principal chamber regarding visit to mentee Institution (RML Awadh University, Faizabad,UP) . The following faculty members are nominated to visit the above said Institute between 7.2.2018 to 11.2.2018

| SI.No. | Department | Name of the Faculty | Designation |
|--------|------------|---------------------|-------------|
| 1 | Computer Science Dept. | Dr. Siddaraju | Professor & HOD |
| | | Smt. Shylaja K R | Associate Professor |
| 2 | Mechanical Engg. Dept. | Sri. Shashikanth N | Associate Professor |
| | | Sri. Chandrashekar.M | Asst. Professor |
| 3 | Electronics & Commn. Dept. | Dr. Jayaramiah G V | Professor & HOD |
| | | Dr. Shivaputra | Asst. Professor |
| 4 | Information Science & Engg. | Dr. Shylaja B S | Professor & HOD |
| | | Dr. Prabha R | Professor |
| 5 | Physics Department | Dr. Srinivasulu Reddy | Professor & HOD |
| · | Chemistry department | Dr. Veenadevi | Professor & HOD |
| 7 | Mathematics department | Dr. Nanjundappa C E | Professor & HOD |
| 8 | HSS | Dr. Shashipriya | Asst. Professor |
| 9 | NBA/NAAC Coordinator | Dr. Meenakshi M Bhat | Professor & HOD |
| 10 | Dean Academic | Dr. Hegde M N | Professor & Dean |

Coordinator

For information of all concerned

Principal
Principal
Dr. Ambedkar Institute of Technology
TEQIP-III
Bengaluru - 560 056.

# Dr. Ambedkar Institute of Technology, Bengaluru-560056
## Department of Electronics & Communication Engineering

## A brief report on visit to mentee Institute

A brief report of visit to Mentee Institution, Institute of Engineering & Technology, Dr. Ram Manohar Lohia Avadh University, Faizabad (UP) during the from 24/9/2018 to 26/9/2018 by Dr. M V Mandi, Professor, Dr. S Ramesh, Professor and Dr. Shivaputra, Assistant Professor, Department of ECE, Dr. AIT is as follows.

The team of 12 faculty members from various departments of Dr. Ambedkar Institute of Technology were taken to IET campus at 10.00 am on 24th Sept' 2018. A meeting with the Director of IET, Dr. Ramapathi Mishra was arranged along with the HODs and team of Dr. AIT, Bangalore. Dr. Ramapathi Mishra, introduced to the twinning coordinator and respective HODs. A discussion and exchange of views with all the faculty members of ECE department about the twinning activities at the department level was done.

After the meeting classes for 1st year, 2nd year, 3rd year and Final Year UG students were engaged on the subjects Basic Electronics, Signals & Systems, Electronic Devices & Circuits, Communication Systems and Data Communication respectively.

Interaction with all students from 1st to 4th year students along with faculty members of ECE department. A brief description of Electronics and Communication Engineering in the current scenario requirement by industry in different technologies, skills required both hard and soft skills and technical skills were updated to all students. Funding of TEQIP-III program, action to be taken by both the mentor institution and mentee institution was explained in detail. Students were briefed about the curriculum pattern of ECE department of Dr AIT.

Students expressed their need and requested for guidance to update their skills in industry oriented technologies such as Embedded, VLSI Design, Digital Communication, Power Electronics, Microprocessor & Microcontroller, Image Processing, Digital Communication, MATLAB etc. Students expressed to provide more exposure to the opportunities of jobs and higher studies. They are very keen to learn all the new industry related technologies.

The lectures for the same subjects were continued for the subsequent days i.e., on 25th Sept' 2018 and 26th Sept' 2018. We also visited Computer Centre, Library and other general facilities and observed that there is improvement in the campus compared to previous visit.

Finally to conclude, we express our thanks to the management and staff of Dr RML University, Faizabad for their wonderful hospitality and support during our visit. We also

thank Management, Principal, Dean and TEQIP Coordinator for their support in organizing this visit.

Some of the photos taken at IET, Faizabad

# Computer Centre
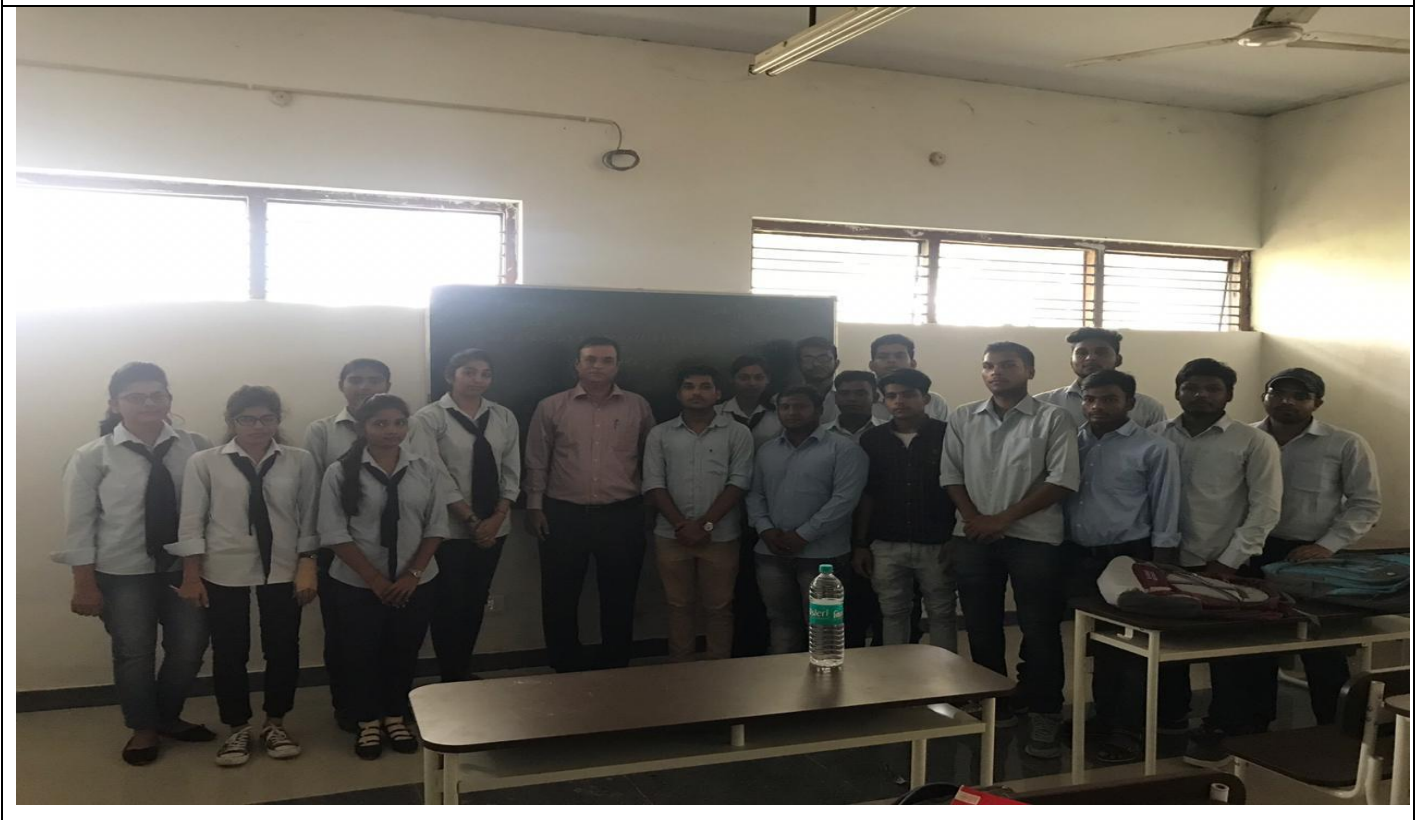
1.  Dr. MAHALINGA V. MANDI

2.  Dr. RAMESH S

3.  Dr. SHIVAPUTRA

**Dr. Ambedkar Institute of Technology**
**Electronics and communication Department**

The enclosed documents are valid and verified.

HOD

ECE Department
HOD
Dept. of Electronics and Communication Engg
Dr. Ambedkar Institute of Technol...
Bengaluru - 560056

# REPORT

**TEQIP – III** Sponsored
**15 Days Online Future Skill Training Program For Students on**
**"Artificial Intelligence and Machine Learning"**
From
1st to 18th September 2021

## Organized by Department of Computer Science and Engineering and Department of Electronics and Communication, Dr. AIT

Fifteen Day Future Skill Training Program For Students on **"Artificial Intelligence and Machine Learning"** was organized for Students of Final and Pre Final year students of Dr AIT from 1st -18th September 2021, with Chief Coordination by Dr. Siddaraju, Prof. and Head, Department of CSE and Dr. Ramesh S, Prof. and Head, Dept. of ECE and coordinated by **Srinivas A. H**, Associate Professor, Dept. of CSE, **Swamy T. N**, Assistant Professor, Dept. of ECE, **Shalini N**, Assistant Professor, Dept. of CSE.

Around 83 participants had registered for this program with **14 Students from CSE, 68 students from ECE and 01 from EIE of Dr. Ambedkar Institute of Technology**. Resource person were **Srinivas A. H**, Associate Professor, Dept. of CSE, **Swamy T. N**, Assistant Professor, Dept. of ECE, **Shalini N**, Assistant Professor, Dept. of CSE, Dr. AIT. They have enormous teaching experience in the field of Image Processing, Artificial Intelligence-Machine Learning, VLSI. Also published many research papers in reputed indexed Journals. Also trained faculties and students in various colleges.

Inaugural Session started with Welcome address by Shalini N, Coordinator, Asst. Professor Dept. of CSE. Swamy T. N., Coordinator & Resource Person, Asst. Professor Dept. of ECE explained the Course contents and learning objectives to participants followed by HOD's Address to participants. TEQIP-3 Coordinator, Dr. Mahalinga V Mandi, addressed the Participants and mentioned the importance of the course. Also participants were informed that

test will be conducted by NASSCOM. And finally inaugural session ended with Vote of Thanks by Srinivas, Coordinator, and Associate. Professor Dept. of CSE.

Session was followed by a Valedictory Function which was attended by HOD, Dr. Ramesh S, faculty members of ECE Department and participants, where in the Resource Person briefed about topics covered and outcomes, HoD addressed the participants, and he insisted coordinators to share the recorded video for all participants followed by Feedback by participants and Vote of Thanks By Srinivas A. H, Coordinator, Associate. Professor, Dept. of CSE. Test was conducted using Google forms. Certificates were mailed to participants on providing or filling the Feedback Form and taking test. 15 days future skill training program was successfully completed.



# Dr. Ambedkar Institute of Technology

An Autonomous Institution, Aided by Government of Karnataka, Accredited by NAAC and Affiliated to VTU, Belagavi
Outer Ring Road, Mallathahalli, Bengaluru 560056.
TEQIP-III Sponsored

15 Days Online Future Skill Training for Students
on
"Artificial Intelligence and Machine Learning"

Date: 01/09/2021 to 18/09/2021
Organized by
Department of Electronics and Communication Engineering
Department of Computer Science and Engineering

Coordinators: Srinivas A. H, Swamy T.N, Shalini N

Coordinators

1. Srinivas A. H,
2. Swamy T. N
3. Shalini N

Organized by Dept. of CSE and ECE, Dr.AIT, Bengaluru from 1st – 18th September 2021.

# Dr. AMBEDKAR INSTITUTE OF TECHNOLOGY

(An Autonomous Institution affiliated to VTU, Belagavi)
BDA Outer Ring Road, Mallathalli, Bengaluru-56
Registered Students list

## TEQIP-3 Sponsored Future Skill Training Program on Artificial Intelligence and Machine Learning

From 1st to 18th September 2021

| SL NO | Student Name | USN | Depart ment | Gender | Email | Cate gory |
|---|---|---|---|---|---|---|
| 1 | ANUPAMA A S | 1DA18CS019 | CSE | Female | anupamaas12@gmail.com | OBC |
| 2 | SAHANA K.S | 1DA19EC122 | ECE | Female | sahanasanju2002@gmail.com | OBC |
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| 5 | TEGGINAMATHA DA BASAVANANDA | 1DA20EC423 | ECE | Male | cscvle007@gmail.com | GM |
| 6 | PADMASHREE A | 1DA19EC180 | ECE | Female | padmashree.a145@gmail.com | GM |
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| 12 | YASWANTH MADUGUNDU | 1DA19EC074 | ECE | Male | 1da19ec074.ec@drait.edu.in | GM |
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| 22 | RESHMA D | 1DA18EC111 | ECE | Female | 1da18ec111.ec@drait.edu.in | OBC |

# Dr. AMBEDKAR INSTITUTE OF TECHNOLOGY

(An Autonomous Institution affiliated to VTU, Belagavi)
BDA Outer Ring Road, Mallathalli, Bengaluru-56
Registered Students list
## TEQIP-3 Sponsored Future Skill Training Program on Artificial Intelligence and Machine Learning
From 1<sup>st</sup> to 18<sup>th</sup> September 2021

| 23 | MAHEBOOB BAIG | 1DA20EC410 | ECE | Male | maheboobbaig25@gmail.com | OBC |
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# Dr. AMBEDKAR INSTITUTE OF TECHNOLOGY

(An Autonomous Institution affiliated to VTU, Belagavi)
BDA Outer Ring Road, Mallathalli, Bengaluru-56
Registered Students list

## TEQIP-3 Sponsored Future Skill Training Program on Artificial Intelligence and Machine Learning
From 1ˢᵗ to 18ᵗʰ September 2021

|    | HANAMANTHRAY PATIL |            |     |        |                                      |     |
|----|--------------------|------------|-----|--------|--------------------------------------|-----|
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| 60 | V RAHUL            | 1DA18CS176 | CSE | Male   | rahulvenkat40@gmail.com              | GM  |
| 61 | MUNIKRISHNA V      | 1DA18EC083 | ECE | Male   | munikrishna1823@gmail.com            | SC  |
| 62 | POOJA H B          | 1DA19EC098 | ECE | Female | poojahb2002@gmail.com                | SC  |
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| 67 | HARIPRIYA JORAPUR  | 1DA18CS055 | CSE | Female | haripriya.jorapur@gmail.com          | GM  |
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| 70 | NIRANJAN KUMAR R   | 1DA18EC091 | ECE | Male   | niranjan982.r@gmail.com              | SC  |
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| 73 | NEELAMBIKA         | 1DA18CS097 | CSE | Female | neelambikas819@gmail.com             | OBC |
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# Dr. AMBEDKAR INSTITUTE OF TECHNOLOGY

(An Autonomous Institution affiliated to VTU, Belagavi)
BDA Outer Ring Road, Mallathalli, Bengaluru-56
Registered Students list

## TEQIP-3 Sponsored Future Skill Training Program on Artificial Intelligence and Machine Learning

From 1st to 18th September 2021

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| 81 | SUPARNA BK | 1DA19EC151 | ECE | Female | suparnagowda22@gmail.com | OBC |
| 82 | SNEHA G R | 1DA19EC141 | ECE | Female | snehagowda887@gmail.com | OBC |
| 83 | SHASHANK J | 1DA18EC123 | ECE | Male | shashijteddy@gmail.com | GM |

Coordinators

1. Srinivas A. H,

2. Swamy T. N

3. Shalini N

## About the Organization

Dr. Ambedkar Institute of Technology is managed by Panchajanya Vidya Peetha Welfare Trust (Regd.) was established by Late Sri. M.H.Jayprakash Narayan in 1979The institute is affiliated to Visvesvaraya Technological University (VTU), Belgaum and is accredited by AICTE. The institution has been accredited by National Board of Accreditation (NBA), New Delhi. The institute has been accredited by NAAC with 'A' Grade and is mentee institute for Institution of Engineering & Technology, Dr.Ram Manohar Lohia Avad University, Faizabad, Uttar Pradesh. Most of the programmes are accredited by NBA. Apart from 10 disciplines of Engineering, the institute also offers MCA, MBA and M. Tech. Programs in various specializations. The institute is one among the 14 colleges selected for receiving the World Bank assistance under the Technical Education Quality Improvement Programme (TEQIP) through the government of India.

*Click below link*
*https://forms.gie/Na5uCRwCvrfDZ6da8*

*OR*
*Scan this QR code for registration*
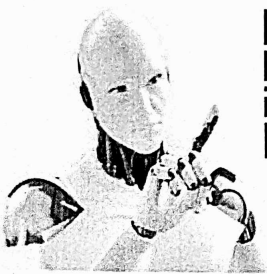
## About the Training

**❝** Imparts knowledge about basics related to industrial robots for their control, design and application in robotics & automation Industries, which is one of the expected areas to have huge employment potential for engineering graduates in coming years **❞**

## Training Objectives

- **Design of Robots using mathematical modeling**
- **Development of mobile robots using Arduino**
- **Use of Open-source Softwares**

## Training Outcomes

- **Perform kinematic and dynamic analyses with simulation**
- **Design control laws for a simple robot.**
- **Integrate mechanical & electrical hardware for a real prototype of robotic device.**
- **Select a robotic system for given industrial application.**

## Training Coordinators

- Mr. Mohan Kumar V, Asst. Prof. ,Dept. of ECE ph:+91 8884660123
- Mrs. Kesthara V, Asst. Prof., Dept. of ECE
- Mr. Mudhusudhan, Asst. Prof., Dept. of ECE
- Mr. Anand H D, Asst. Prof., Dept. of ECE
- Mrs. Vidyashree C, Asst. Prof., Dept. of ECE

## Dr. AMBEDKAR INSTITUTE OF TECHNOLOGY

BDA Outer Ring Road, Mallathalli,Bengaluru-56

**NPIU**
National Project Implementation Unit

## TEQIP Assisted Online Student Training on Future Skill Technologies

*ROBOTICS*
*&*
*AUTOMATION*

*July 16th – September 30th 2020*

*Register now*

## Instructions for participants:

❖ The training of students shall be conducted during July – Sept 2020.

❖ Students may be allowed for necessary lab work / hands-on practice after lockdown in batches of appropriate size while following strict safety protocols and practicing social distancing.

❖ Post training assessment and certification shall be conducted through SSC NASSCOM after the training.

❖ The students shall undergo formative progress review test conducted by NASSCOM midway during the training program.

## Topics to be Covered:

1. Introduction to Robotics
2. Robot Kinematics and Dynamics
3. Sensors
4. Robot Actuation Systems
5. Robot Control
6. Control Hardware and Interfacing
7. AI in Robotics.
8. Robotics and Automation for Industry 4.0
9. Robot safety and social robotics.
10. Practical sessions will be on Robot design & simulation open source softwares

## Pre-requisites:

➤ Calculus and linear algebra
➤ Basic Electrical Engineering
➤ Control System
➤ Embedded System & HDL

## Who can Register?

This is an Interdisciplinary course, so students from all branches of final semester can register

❖ The course will be conducted for 2 hours daily form Monday to Friday.

❖ Proctored exam will be conducted during midway (2nd week of august) and at the end of course

❖ Sessions will be conducted through online mode and learning management system(LMS)

❖ Assignment and practice quiz will be given after every session

❖ Register as soon as possible as the number of participants is limited
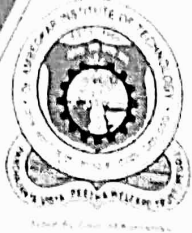
# Dr. AMBEDKAR INSTITUTE OF TECHNOLOGY

BDA Outer Ring Road, Mallathalli, Bengaluru-56

## Cordial Invites

all Deans, HODs, Staff and Students of Dr. AIT

**NPIU**

National Project Implementation Unit

**40**

for Inauguration of
**TEQIP Assisted
Online Student Training on
Future Skill Technology**

*ROBOTICS
&
AUTOMATION*

22/07/2020
10.30 AM

## Keynote Address by

**Dr. Pushparaj Mani Pathak**
*Professor, Mechanical & Industrial
Engineering Department, IIT Roorkee*

## In the Gracious Presence of

**Dr. Nanjundaswamy C.,** *Principal, Dr. AIT*

**Dr. Siddaraju,** *Dean(Academic), Dr. AIT*

**Dr. Mahalinga V. Mandi,** *TEQIP Coordinator, Dr. AIT*

### Course Coordinators:
Mr. Mohan Kumar V, Asst. Prof., Dept. of ECE
Mrs. Kesthara V, Asst. Prof., Dept. of ECE
Mr. Mudhusudhan, Asst. Prof., Dept. of ECE
Mr. Anand H D, Asst. Prof., Dept. of ECE
Mrs. Vidyashree C, Asst. Prof., Dept. of ECE

## Program Schedule
(10.30 am to 12 noon)

**Brief Introduction About Training Program**

**Principal's Address to students**

**Key Note Address**

Scan above code/join Google Meet link: https://meet.google.com/dto-nkyd-drq?hs=122&authuser=0
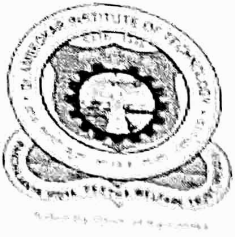
# Dr. AMBEDKAR INSTITUTE OF TECHNOLOGY

BDA Outer Ring Road, Mallathalli, Bengaluru-56
Dept. of Electronics and Communication Engineering

TEQIP Assisted
Online Student Training on Future Skill Technologies
## "Robotics & Automation"

22nd July 2020 to 17th January 2021

**NPIU**
National Project Implementation Unit

# DETAIL REPORT

TEQIP Assisted Online Student Training on Future Skill Technologies **"Robotics & Automation"** was organized for Interested Students of all branches of Dr. AIT of all branches from 22/07/2020 to 17/01/2021 coordinated by **Mohan Kumar V, Kesthara V, Madhusudhan M, Anand H D and Vidyashree C,** Assistant Professors, Dept. of ECE, Dr. AIT

The participants for this training program were 50 Students from different branches like Computer Science and Engineering, Electronics and Communication Engineering, Electronics and Instrumentation Engineering, Information Science and Engineering and Mechanical Engineering of Dr. AIT, Bengaluru.

Resource persons were **Mohan Kumar V,** Assistant Professor, Dept. of ECE, Dr. AIT who was trained at IIT Roorkee, **Kesthara V, Madhusudhan M and Anand H D,** Assistant Professors, Dept. of ECE, Dr. AIT who were trained at IIT Madras and **Vidyashree C,** Assistant Professor, Dept. of ECE, Dr. AIT who was trained at IIT-Gurg

The training program was formally inaugurated in Online mode on 22nd July 2020 in the presence of **Dr. Mahalinga V Mandi,** Dean (Planning & Development), TEQIP III coordinator Dr A.I.T, Coordinators and Participants.

The inaugural session also included Key note address by **Dr. Pushparaj Mani Pathak ,** Professor, Mechanical & Industrial Engineering Department, IIT Roorkee where in participants were provided the introduction to Robotics and Automation, there configurations and Robotic applications.

The successive session was handled by Mohan Kumar V, Assistant Professor, Dept. of ECE, Dr. AIT, who provided the overview of course and details of successive sessions regularly handled by respective training faculty are as follow:

| Session No. | Date & Time | Session Handled by | Topics covered |
| --- | --- | --- | --- |
| 1. | 23.07.2020 11:30 AM- 12:30 PM | Mohankumar V. | Introduction Part-I |
| 2. | 23.07.2020 12:30 PM- 1:30 PM | Anand H D | Introduction part-II |
| 3. | 24.07.2020 11:30 AM- 12:30 PM | Anand H D | Introduction part-III |
| 4. | 24.07.2020 12:30 PM - 01:30 PM | | |
| 5. | 25.07.2020 10:00 AM - 11:00 AM | Mohankumar V. | Spatial Descriptions |
| 6. | 25.07.2020 11:00 AM- 12:00 PM | | |
| 7. | 26.07.2020 10:00 AM- 11:00 PM | Mohankumar V. | Spatial Transformation |
| 8. | 26.07.2020 11:00 AM - 12:00 PM | | |
| 9. | 27.07.2020 05:00 PM - 06:00 PM | Mohankumar V. | Representation of Angles |
| 10. | 27.07.2020 06:00 PM - 07:00 PM | | |
| 11. | 28.07.2020 10:30 AM - 11:30 AM | Vidyashree C | Forward kinematics |
| 12. | 28.07.2020 11:30 AM - 12:30 PM | | |
| 13. | 29.07.2020 05:00 PM - 06:00 PM | Vidyashree C | Forward kinematics |
| 14. | 29.07.2020 06:00 PM - 07:00 PM | | |
| 15. | 02.08.2020 09:30 AM - 10:30 AM | Vidyashree C | Inverse kinematics |
| 16. | 02.08.2020 10:30 AM - 11:30 AM | | |
| 17. | 03.08.2020 09:00 AM - 10:00 AM | Vidyashree C | Inverse kinematics |
| 18. | 03.08.2020 10:00 AM - 11:00 AM | | |
| 19. | 04.08.2020 10:30 AM - 11:30 AM | Vidyashree C | Inverse kinematics |
| 20. | 04.08.2020 11:30 AM - 12:30 PM | | |
| 21. | 06.08.2020 05:00 PM - 06:00 PM | Vidyashree C | Jacobian |

| | 23.08.2020 | | |
|---|---|---|---|
| 44. | 10:00 AM- 11:00 AM | | |

**Mid-Training assessment of students** on Future Skill technologies through NASSCOM SSC was carried out on 24th August 2020 and around 40 participants appeared for the exam.

Then respective training faculty continued to handle sessions, whose details are as follow

| Session No. | Date & Time | Session Handled by | Topics covered |
|---|---|---|---|
| 45. | 25.08.2020 05:00 PM- 06:00 PM | Kesthara V | Linear Control of Manipulators Part-II |
| 46. | 25.08.2020 06:00 PM- 07:00 PM | | Non-Linear Control of Manipulators Part-1 |
| 47. | 26.08.2020 05:00 PM- 06:00 PM | Kesthara V | Non-Linear Control of Manipulators Part-II |
| 48. | 26.08.2020 06:00 PM- 07:00 PM | | |
| 49. | 27.08.2020 05:00 PM- 06:00 PM | Kesthara V | Linear Control of Manipulators Part-II |
| 50. | 27.08.2020 06:00 PM- 07:00 PM | | Non-Linear Control of Manipulators Part-1 |
| 51. | 29.08.2020 05:00 PM- 06:00 PM | Kesthara V | Non-Linear Control of Manipulators Part-II |
| 52. | 29.08.2020 06:00 PM- 07:00 PM | | |
| 53. | 03-09-2020 05:00 PM- 06:00 PM | Madhusudhan M | Robotics and Automation for Industry 4.0 |
| 54. | 03-09-2020 06:00 PM- 07:00 PM | | |
| 55. | 05-09-2020 05:00 PM - 06:00 PM | Anand H D | Embedded Systems |
| 56. | 05-09-2020 06:00 PM - 07:00 PM | | |
| 57. | 06-09-2020 03:00 PM- 05:00 PM | Madhusudhan M | Robotics safety and social Robots |
| 58. | 06-09-2020 04:00 PM- 05:00 PM | | |
| 59. | 03-01-2021 4:00 PM- 5:00 PM | Anand H D | Artificial Intelligence |
| 60. | 03-01-2021 6:00 PM- 7:00 PM | | |

| | | | |
|---|---|---|---|
| 22. | 06.08.2020<br>06:00 PM - 07:00 PM | | |
| 23. | 07.08.2020<br>09:30 AM - 10:30 AM | Vidyashree C | Dynamics |
| 24. | 07.08.2020<br>10:30 AM - 11:30 AM | | |
| 25. | 08.08.2020<br>10:30 AM - 11:30 AM | Vidyashree C | Dynamics |
| 26. | 08.08.2020<br>11:30 AM - 12:30 PM | | |
| 27. | 09.08.2020<br>10:30 AM - 11:30 AM | Vidyashree C | Dynamics |
| 28. | 09.08.2020<br>11:30 AM - 12:30 PM | . | |
| 29. | 10-08-2020<br>05:00 PM - 06:00 PM | Anand H D | Sensors-I |
| 30. | 10-08-2020<br>06:00 PM - 07:00 PM | | |
| 31. | 12-08-2020<br>05:00 PM- 06:00 PM | Madhusudhan M | Actuators |
| 32. | 12-08-2020<br>06:00 PM - 07:00 PM | | |
| 33. | 13-08-2020<br>05:00 PM - 06:00 PM | Anand H D | Sensors-II |
| 34. | 13-08-2020<br>06:00 PM - 07:00 PM | | |
| 35. | 16-08-2020<br>05:00 PM- 06:00 PM | Madhusudhan M | Problems on Actuators |
| 36. | 16-08-2020<br>06:00 PM- 07:00 PM | | |
| 37. | 17-08-2020<br>05:00 PM- 06:00 PM | Madhusudhan M | Manipulator Mechanism Design |
| 38. | 17-08-2020<br>06:00 PM- 07:00 PM | | |
| 39. | 18-08-2020<br>05:00 PM- 06:00 PM | Madhusudhan M | Manipulator Mechanism Design |
| 40. | 18-08-2020<br>06:00 PM- 07:00 PM | | |
| 41. | 20-08-2020<br>05:00 PM- 06:00 PM | Kesthara V | Linear Control of Manipulators Part-1 |
| 42. | 20-08-2020<br>06:00 PM- 07:00 PM | | |
| 43. | 23.08.2020<br>09:00 AM- 10:00 AM | Mohankumar V. | Revision of module-1 |

Finally on 17th January 2021 Post-training assessment of students was conducted through NASSCOM SSC and 37 participants attended the exam, with this training program was successfully completed.
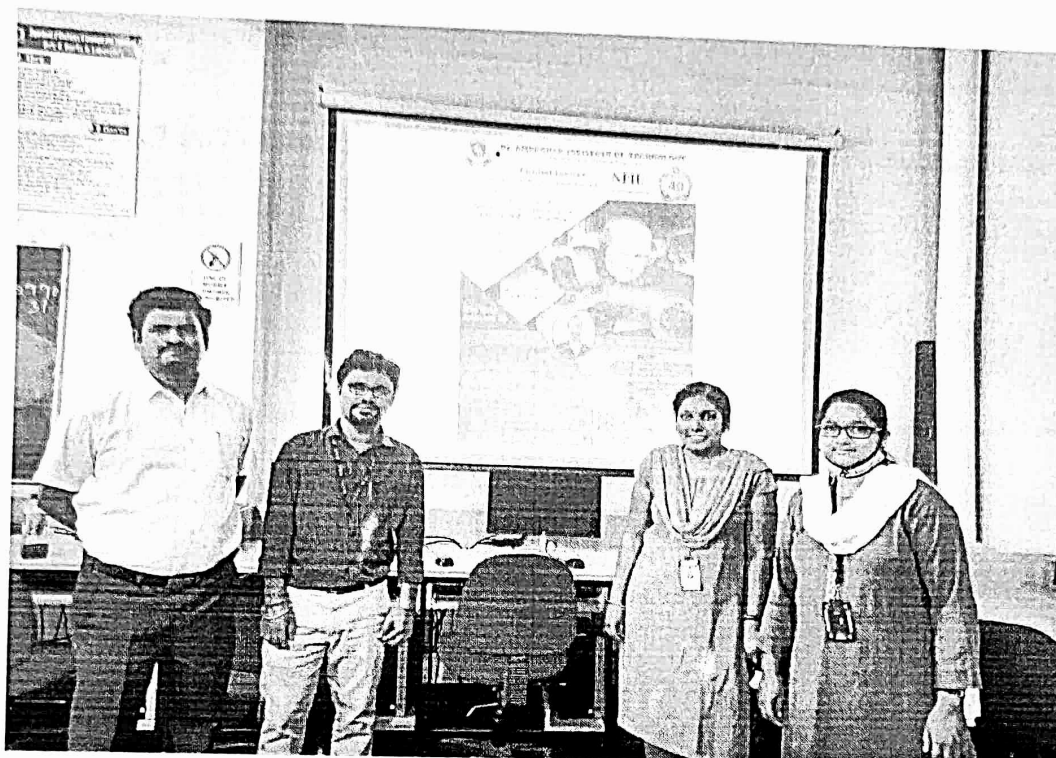


**Pic. 1: Coordinators/ Faculty Trainers of Robotics and Automation Training Program during Inauguration of Training Program**
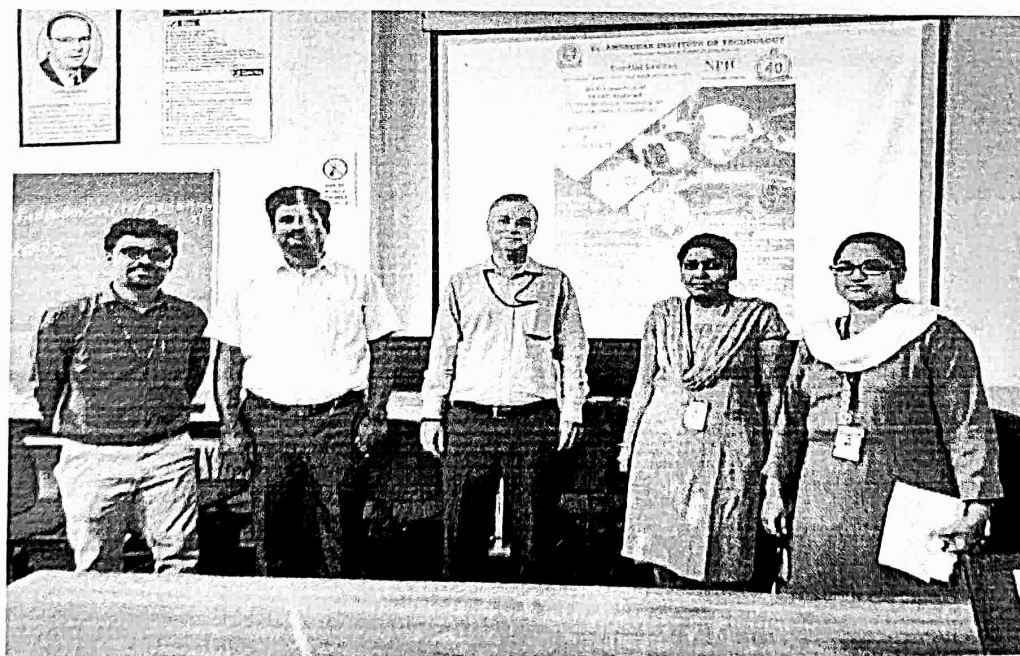


**Pic. 2: Coordinators/ Faculty Trainers of Robotics and Automation Training Program with Dr. Mahalinga V Mandi, Dean (Planning & Development), TEQIP III coordinator Dr A.I.T during Inauguration of Training Program**

# DR. AMBEDKAR INSTITUTE OF TECHNOLOGY

BDA Outer ring road, Mallathalli, Bengaluru-56

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## TEQIP
### Assisted Training on Future Skill Technologies

# CYBER SECURITY
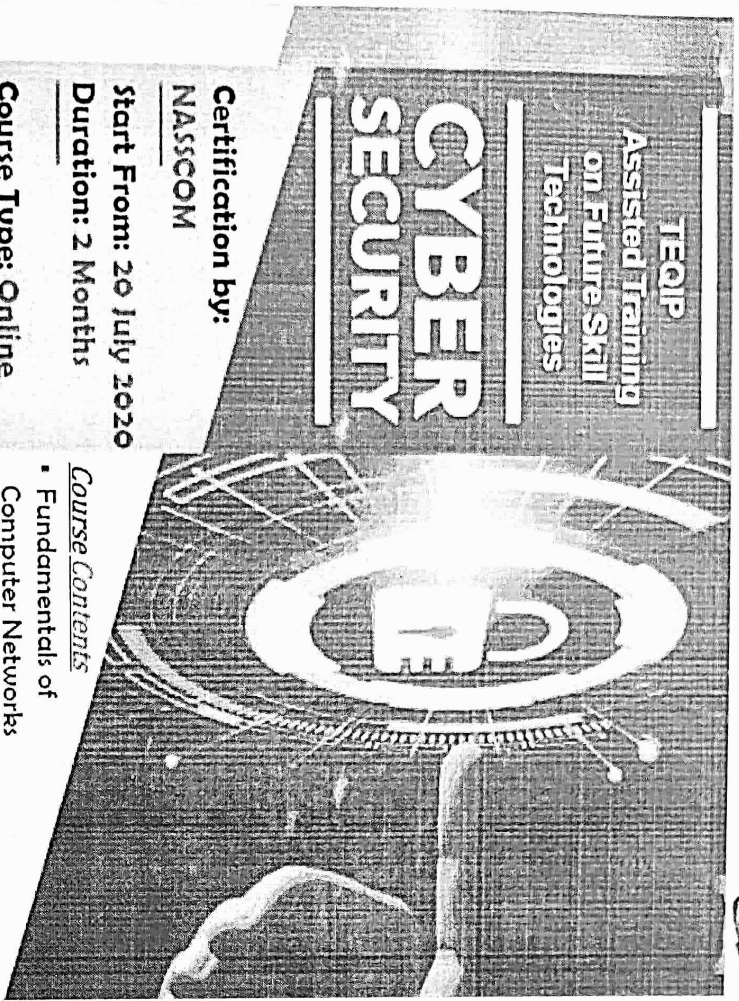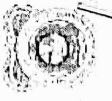
**Certification by:**
NASSCOM

**Start From: 20 July 2020**
**Duration: 2 Months**

**Course Type: Online**
Webinar

**Scan and Register**

Post training assessment and certification shall be conducted through

**SSC NASSCOM**

TEQIP-3

### Course Contents

- Fundamentals of Computer Networks
- Network Layers, Protocols
- Cyber Security Vulnerabilities
- Cryptography, Firewalls and Malware
- Cyber Security management
- Web Services and Cyber Laws

### Course Objectives

- To impart necessary knowledge to establish a solid understanding of the Cyber Security environment
- To provide opportunities of academic pursuits to students to improve their knowledge as a life-long activity

*Chief Convener*

Dr. C Nanjundaswamy
Principal. Dr. AIT. Bangalore.

*Convener*

Dr. Mahalinga V Mandi
Dean (Planning and Development) and
TEQIP-III Coordinator. Dr. AIT.

*Course Facilitator and Coordinator*

Dr. Yamuna Devi, Asso. Prof/HOD. TE. Dr. AIT. 9886716525
Dr. Mary Cherian, Prof. CSE. Dr. AIT. 9986885560
Ms. Nithyashree S, Asst. Prof. ECE. Dr. AIT. 81239698O
Ms. Spoorthi P A. Asst. Prof. ECE. Dr. AIT. 9035286400
Mr. Sujay S N, Asst. Prof. ECE. Dr. AIT. 9886991995

*Course Outcomes*

- Demonstrate understanding of basic networking and network security concepts needed for cyber security.

- Apply the cyber security knowledge to build models to prevent cyber attacks.

- Build an understanding of cyber laws and cyber security management.

Registration Fee:
✓ FREE for students of Dr. AIT.
Who can participate?
✓ Students from any branch of Engineering can participate in the course

**Scan and Register**

https://forms.gle/yo5fn3mg3bHGDXMGA

# Dr. Ambedkar Institute of Technology

Details of Registered Students for Cyber Security Course

## Course: Cyber Security

| Sl.No | Email | NAME | USN | DEPARTMENT | SEMESTER | COTACT NO. | GENDER | DATE OF BIRTH |
|---|---|---|---|---|---|---|---|---|
| 1 | aditya.monika55@gmail.com | Aditya Tiwari | 1DA17IS002 | Information Science Engineering | BE 6th sem | 9108596165 | Male | 5/5/1999 |
| 2 | akshayakumar181@gmail.com | Akshaya K | 1DA17CS010 | Computer Science Engineering | BE 6th sem | 8310103993 | Female | 8/24/1999 |
| 3 | mayuraamogha19@dr-ait.org | Amogha S | 1DA17CS013 | Computer Science Engineering | BE 6th sem | 8951338715 | Male | 3/1/1999 |
| 4 | anagha.melepal@gmail.com | Anagha Ajoykumar | 1DA17CS014 | Computer Science Engineering | BE 6th sem | 8277095695 | Female | 9/20/1999 |
| 5 | anandanagha2@gmail.com | Anagha Anand | 1DA17EC011 | Electronics and Communication Engineering | BE 2nd Sem | 8073643214 | Female | 9/1/1999 |
| 6 | anupama1202@gmail.com | ANUPAMA A S | 1DA18CS019 | Computer Science Engineering | BE 4th Sem | 9380688630 | Female | 2/12/2000 |
| 7 | anushamg511@gmail.com | Anusha.M.G | 1DA19CS016 | Computer Science Engineering | BE 2nd Sem | 8971454195 | Female | 1/5/2001 |
| 8 | chaithanyaju@gmail.com | Chaithanya J Umashankar | 1DA19IS007 | Information Science Engineering | BE 2nd Sem | 9591185729 | Female | 9/6/2001 |
| 9 | chandanak157@gmail.com | Chandana K | 1DA17CS034 | Computer Science Engineering | BE 6th sem | 9.1866E+11 | Female | 4/15/1999 |
| 10 | srujangowda66@gmail.com | D M SRUJAN GOWDA | 1DA17EC137 | Electronics and Communication Engineering | BE 6th sem | 6362881850 | Male | 5/10/1999 |
| 11 | darshancr58@gmail.com | Darshan C R | 1DA18EC410 | Electronics and Communication Engineering | BE 6th sem | 9964182058 (or) 7676656210 | Male | 3/2/2000 |
| 12 | darshithsuresh2001@gmail.com | Darshith.S | 1DA19IS010 | Information Science Engineering | BE 2nd Sem | 7349546760 | Male | 10/31/2001 |
| 13 | deepaksr.dsr@gmail.com | Deepak S R | 1DA18CS044 | Computer Science Engineering | BE 4th Sem | 9535577222 | Male | 4/24/2000 |
| 14 | surendrasindhu7@gmail.com | JAYAM SURENDRA SINDHU | 1DA17CS058 | Computer Science Engineering | BE 6th sem | 9182766754 | Female | 7/23/2000 |
| 15 | kartikkorhalle25@gmail.com | Kartik | 1DA18CS062 | Computer Science Engineering | BE 4th Sem | 8296160890 | Male | 11/25/2000 |
| 16 | kavitaprabhu1999@gmail.com | Kavita Nagaraj Prabhu | 1DA18TE015 | Telecommunication Engineering | BE 4th Sem | 9986242310 | Female | 9/1/1999 |
| 17 | kavyatejas1997@gmail.com | KAVYA H C | 1DA18EC415 | Electronics and Communication Engineering | BE 4th sem | 9108298422 | Female | 6/1/1997 |
| 18 | kavyapn789@gmail.com | Kavya PN | 1DA18EC416 | Electronics and Communication Engineering | BE 6th sem | 8050248210 | Female | 6/10/1999 |
| 19 | kavyav864@gmail.com | Kavya. V | 1DA19IS016 | Information Science Engineering | BE 2nd Sem | 9483685748 | Female | 8/8/1999 |
| 20 | kirankumarbm007@gmail.com | Kirankumar B M | 1da18ec417 | Electronics and Communication Engineering | BE 6th sem | 7259632847 | Female | 11/16/2000 |
| 21 | lavanya.venkatesh1999@gmail.com | Lavanya V | 1DA18CS413 | Computer Science Engineering | BE 6th sem | 9663647570 | Male | 10/23/1999 |
| 22 | mlokesha2@gmail.com | Lokesha | 1DA19EI407 | Electronics and Instrumentation Engineering | BE 4th Sem | 815809213 | Male | 6/11/1999 |
| 23 | manojgowdago@gmail.com | Manoj R | 1DA17EC076 | Electronics and Communication Engineering | BE 6th sem | 9035225281 | Male | 5/22/1999 |
| 24 | muskansultanamussu2006@gmail.com | Muskan sultana | 1DA19IS022 | Information Science Engineering | BE 2nd Sem | 9741763715 | Female | 6/20/2001 |
| 25 | medhinisampemane@gmail.com | Medhini Sampemane | 1DA19IS021 | Information Science Engineering | BE 2nd Sem | 9108850764 | Female | 12/15/2000 |
| 26 | namitharao1999@gmail.com | Namitha Rao | 1DA17CS089 | Computer Science Engineering | BE 6th sem | 8317356957 | Female | 7/3/1999 |
| 27 | niki24111999@gmail.com | Nikita Ashok Shet | 1DA17CS095 | Computer Science Engineering | BE 6th sem | 9113568498 | Male | 10/30/2000 |
| 28 | paavanikomarla@dr-ait.org | Paavani Komarla | 1DA17CS103 | Computer Science Engineering | BE 6th sem | 8861659494 | Female | 9/11/1999 |
| 29 | poojabanavaras123@gmail.com | Pooja BS | 1DA17CS108 | Computer Science Engineering | BE 6th sem | 9513025727 | Female | 12/26/1999 |
| 30 | poojahamsa99@gmail.com | Pooja yadav P N | 1DA18EC429 | Electronics and Communication Engineering | BE 6th sem | 7349456068 | Female | 12/30/1999 |
| 31 | poojit.chowdry@gmail.com | Poojit Chowdry | 1DA17CS110 | Computer Science Engineering | BE 6th sem | 9910043651 | Male | 11/5/1998 |

| No | Email | Name | USN | Branch | Semester | Phone | Gender | DOB |
|---|---|---|---|---|---|---|---|---|
| 32 | prajwalbandipraj113@gmail.com | Prajwal | 1DA18TE028 | Telecommunication Engineering | BE 4th Sem | 7829231037 | Male | 11/23/2000 |
| 33 | pkohli515@gmail.com | PRASHANT | 1DA18EC432 | Electronics and Communication Engineering | BE 6th sem | 7353666871 | Male | 12/1/1997 |
| 34 | raj476ec@gmail.com | Prashanth Raj C S | 1da18ec433 | Electronics and Communication Engineering | BE 6th sem | 8496011255 | Male | 6/21/1999 |
| 35 | pratheepkumarnm26@gmail.com | PRATHEEPKUMAR NM | 1DA18EC434 | Electronics and Communication Engineering | BE 6th sem | 9019699325 | Male | 9/22/1999 |
| 36 | happysaini85@gmail.com | Pratik Sharma | 1DA17CS117 | Computer Science Engineering | BE 6th sem | 8073413373 | Male | 2/23/2000 |
| 37 | preranavshetty27@gmail.com | PRERANA V | 1DA19IS025 | Information Science Engineering | BE 2nd Sem | 9986499325 | Female | 6/27/2001 |
| 38 | prithvibadekkila1@gmail.com | Prithvi B | 1DA17EC102 | Electronics and Communication Engineering | BE 6th sem | 9741017811 | Male | 10/12/1998 |
| 39 | rajrajalakshmi39@gmail.com | Rajalakshmi N N | 1DA19CS119 | Computer Science Engineering | BE 2nd Sem | 9483449164 | Male | 9/13/1999 |
| 40 | rakshahande@gmail.com | Raksha S Hande | 1DA19IS030 | Information Science Engineering | BE 2nd Sem | 8884628299 | Female | 12/1/2002 |
| 41 | rakshithkumar13sept@gmail.com | RAKSHITH J | 1DA17EC113 | Electronics and Communication Engineering | BE 6th sem | 9481659342 | Female | 10/12/1998 |
| 42 | rashmimn42@gmail.com | Rashmi MN | 1DA19IS031 | Information Science Engineering | BE 2nd Sem | 7022459486 | Female | 9/22/2001 |
| 43 | raochreshma@gmail.com | RESHMA RAO C H | 1DA19IS031 | Information Science Engineering | BE 2nd Sem | 9483605430 | Female | 10/30/2000 |
| 44 | roopashree7839@gmail.com | Roopashree B R | 1DA17EC117 | Electronics and Communication Engineering | BE 6th sem | 9113895158 | Female | 8/4/1999 |
| 45 | iamsachi10@gmail.com | SACHIN B | 1DA18EC438 | Electronics and Communication Engineering | BE 6th sem | 9535332975 | Male | 3/18/1999 |
| 46 | sandhyamvkadur@gmail.com | Sandhya M V | 1DA17EC121 | Electronics and Communication Engineering | BE 6th sem | 9663222804 | Female | 8/16/1999 |
| 47 | sharath.h.s.143@gmail.com | Sharath kumara H S | 1DA18EC441 | Electronics and Communication Engineering | BE 6th sem | 7676122709 | Male | 8/11/1996 |
| 48 | senthilanand29@gmail.com | SENTHILANAND P | 1DA17CS153 | Computer Science Engineering | BE 6th sem | | Male | 7/29/1999 |
| 49 | shashank09111999@gmail.com | SHASHANK B | 1DA17EC126 | Electronics and Communication Engineering | BE 6th sem | 8971628295 | Male | 11/9/1999 |
| 50 | shashankbbaragur@gmail.com | Shashank b baragur | 1DA17EC127 | Electronics and Communication Engineering | BE 6th sem | 7411715223 | Male | 5/25/1999 |
| 51 | shashibgss64@gmail.com | Shashi Kumar S | 1DA18EC442 | Electronics and Communication Engineering | BE 6th sem | 9738614662 | Male | 3/3/2000 |
| 52 | shravyamsgowda@gmail.com | Shravya MS | 1DA17CS201 | Computer Science and Engineering | BE 6th sem | 9206561525 | Female | 11/14/1999 |
| 53 | 176shrusti@gmail.com | SHRUSTI | 1DA17CS160 | Computer Science Engineering | BE 6th sem | 7892799708 | Female | 6/17/1999 |
| 54 | shilpa1999.mohan@gmail.com | Shilpa M | 1DA17EC129 | Electronics and Communication Engineering | BE 6th sem | 9164446431 | Female | 2/15/1999 |
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## About the Organization

Dr. Ambedkar Institute of Technology is managed By Panchajanya Vidya Peetha Welfare Trust(Regd.) was established by Late Sri M.H.Jayaprakash Narayan in 1979. The institute is affiliated to Visveswaraya Technological University, Belagavi and is accredited by AICTE. The institution has been accredited by NBA, NAAC with 'A' grade and it is mentee instsitute for Institution of Engineering & Technology, Dr.Rammanohar Lohia Avad University, Faizabad, Uttar pradesh. Apart from the 10 disciplines of Engineering, the institute also offers MCA,MBA and M.Tech programs in various specializations. The institute is one among the 14 colleges selected for receiving the World Bank assistance under the Technical Education Quality Improvement Programme(TEQIP) through Governmnet of India.

Click below link for registration

https://forms.gle/uCdw5X8oU38xVAAf9

OR

Scan the following QR code

## About the Training

As we are living in the world of connected devices and things, gaining the knowledge in the development of IoT which is future technology is the order of the day. The course focuses on intricacies involved in the development of IoT to prepare the candidates for the industrial standard technologies.

### Course Outcomes

- Familiarize with the knowledge of IoT development.
- Design IoT based prototypes.
- Exposure to the open source tools for IoT .

### Course Coordinators

Dr. Umadevi H, Professor,

9880324895

B.S.Sudha , Associate Professor,

9242363088

Girija S, Assistant Professor,

9986007870

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## Dr. AMBEDKAR INSTITUTE OF TECHNOLOGY

BDA Outer Ring Road, Mallathalli,Bengaluru-56

## TEQIP Assisted
## Online Student Training
### Future Skill Technology

NPIU

40
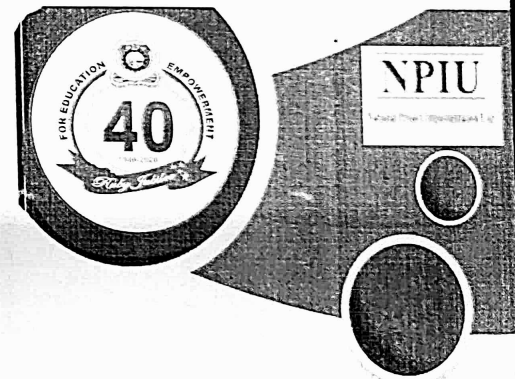
## INTERNET OF THINGS (IoT)

11th July 2020 to 30th September 2020

# REPORT

## on

## TEQIP- III assisted training program on Future Skill Technologies: "Internet of Things"

### Objectives of training program on Future Skill Technologies:

**Objective of this training program is to teach the students of different branches of engineering, the computer communication techniques, to train them about Internet of things and to educate them on practical implementation of Internet of things concepts.**

The TEQIP assisted training program on Future Skill Technology "**Internet of Things**" for students of Dr. Ambedkar Institute of Technology, Bangalore was inaugurated on 22.07.2020 at 10.30 am. The Chief Guest of the event was Dr. Ashok Rao, Director, National Institute of Technology, Mysore. 92 students from different branches, mainly Electronics and Communication Engineering, Computer Science and Information Science attended the training program. The training included 52 Hours of theory and 10 Hours of Practical sessions on Sensors, different interfaces, and communication protocols. The topics covered are as per the syllabus provided by NPIU.

The sessions started from 22.07.2020 with **Girija S**, Assistant Professor, Dept. Of ECE, Dr. AIT as the trainer from the session "Introduction to IoT".  Various theory sessions were handled by

1. **B.S. Sudha** , Asso. Prof, Dept. Of ECE, Dr. AIT
2. **Dr. Umadevi H**, Professor, Dept. Of TCE, Dr. AIT

The practical sessions were handled by Mr.Narasimhan M S, , , Mysore and Satish Kumar M, Senior Technical Officer-2, ASID, CSIR, NAL, and Mr. Akash Hegde, Assistant Professor, BNMIT, Bangalore.

A proctored online mid-semester assessment was conducted by NPIU on 04.09.2020 and was evaluated by NPIU.  The results were communicated to the students as well as the trainers.  The performance of the students is found to be good.  The conduction of theory and practical sessions were successfully completed by the trainers as per the schedule. The Proctored online final assessment was conducted by NPIU, on 31st December 2020.

### Outcomes of training program on Future Skill Technologies:

**The students have gained knowledge in sensors, actuators, communication protocols, networking, cloud computing and machine learning techniques and are able to learnt hands on IoT concepts.**
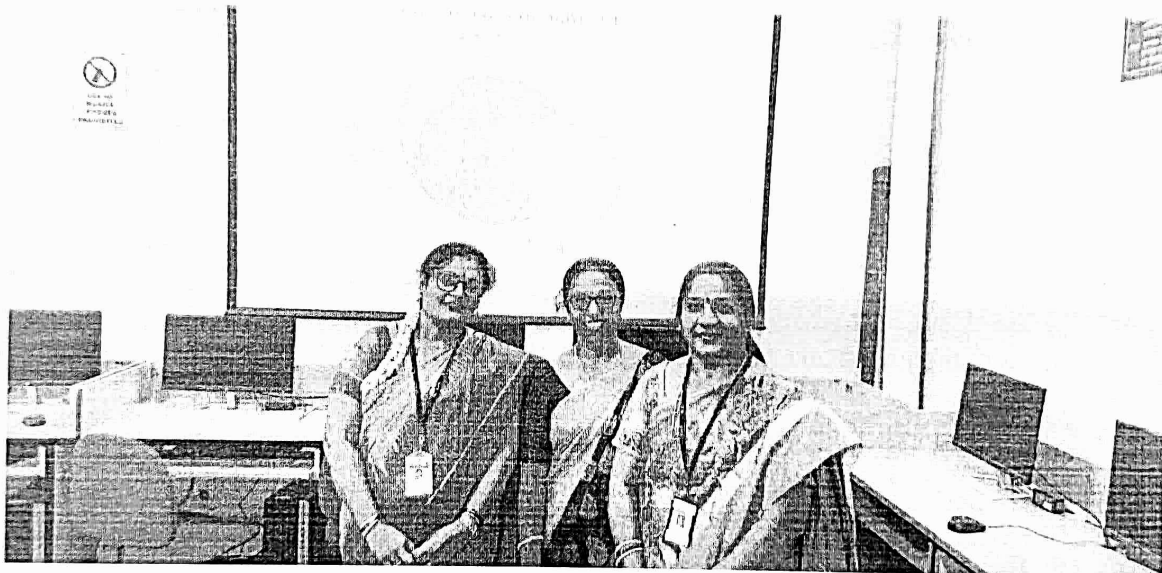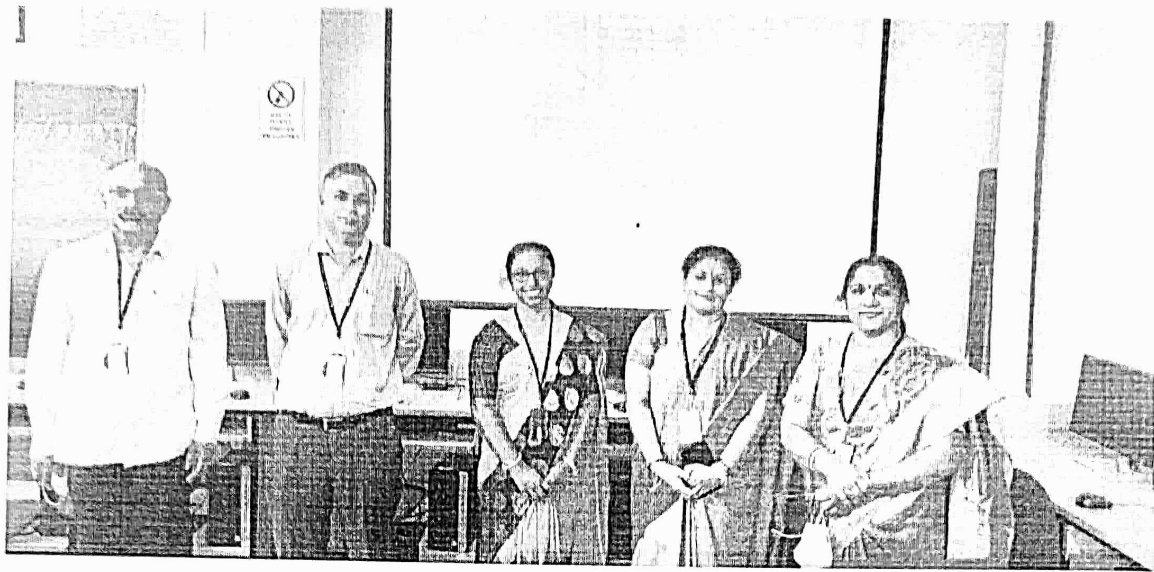
# Dr.AMBEDKAR INSTITUTE OF TECHNOLOGY

BDA Outer Ring Road, Mallathahalli, Bengaluru-56
**Dept. of Electronics and Communication Engineering**
**TEQIP-III Assisted**
**Future Skill Training on**

## *"Internet of Things"*

10th March 2021 to 24th March 2021

## Course Objective

1. To provide necessary foundation on Computer communication.
2. Impart necessary knowledge about Internet of Things and its importance.
3. Developing programming skills to code solution for practical problems.
4. To build Internet of things applications.


Shwetha M

Assistant Professor

Dept of ECE, Dr AIT

# Dr.AMBEDKAR INSTITUTE OF TECHNOLOGY

BDA Outer Ring Road, Mallathahalli, Bengaluru-56
**Dept. of Electronics and Communication Engineering**
**TEQIP-III Assisted**
**Future Skill Training on**

## *"Internet of Things"*

**10th March 2021 to 24th March 2021**

**NPIU**
National Project Implementation Unit

**Course Learning Outcomes**

1. Interpret the impact and challenges posed by IoT networks leading to new architectural models.
2. Compare and contrast the deployment of smart objects and the technologies to connect them to network.
3. Appraise the role of IoT protocols for efficient network communication.
4. Analyse higher layer IoT Protocols.
5. Elaborate the need for Data Analytics

Shwetha M

Assistant Professor

Dept of ECE, Dr AIT

# Dr.AMBEDKAR INSTITUTE OF TECHNOLOGY

BDA Outer Ring Road, Mallathahalli, Bengaluru-56
**Dept. of Electronics and Communication Engineering**
**TEQIP-III Assisted**
**Future Skill Training on**

## *"Internet of Things"*

10th March 2021 to 24th March 2021

# Report Summary

Ms. Shwetha M was trained online by IIT Bombay from 23rd Feb 2021 to 27th Feb 2021 on "Internet of Things" under Future Skill Technologies. This is a report on Internet of Things course initiated by NPIU.

Ms. Shwetha has handled classes of 45 hours on internet of things as on 24th March 2021. The main concepts covered in this course are IoT Introduction and Fundamentals, Signals, Sensors, Actuators, Interfaces, Networking and Cloud Computing in IoT and Data Analysis for IoT applications.

The hands-on sessions will be held using python on Jupiter platform in the next sessions as the students need to take both mid-term and final assessment exams. Those details will be provided later.

The training was conducted in a blended mode by the resource person Ms. Shwetha. M. The course objective/s is to provide necessary foundation on networks, knowledge about Internet of Things, programming skills and its applications.

As a course outcome/s, students will be able to do projects under Internet of Things, undertake internships on that topic, can relate and implement Internet of Things on various applications models.

Shwetha M

Assistant Professor

Dept of ECE, Dr AIT

# Dr.AMBEDKAR INSTITUTE OF TECHNOLOGY

BDA Outer Ring Road, Mallathahalli, Bengaluru-56
**Dept. of Electronics and Communication Engineering**
**TEQIP-III Assisted**
**Future Skill Training on**

## *"Internet of Things"*

**10th March 2021 to 24th March 2021**

**NPIU**
National Project Implementation Unit

| Day | Hours | Classes | Topics Covered |
|---|---|---|---|
| 10-3-2021 | 3 | 1 | IoT :Introduction and Fundamentals |
| | | 2 | Fundamentals of IoT |
| | | 3 | Fundamentals of IoT |
| 11-3-2021 | 3 | 4 | Deciphering the term IoT |
| | | 5 | Applications where IoT can be deployed |
| | | 6 | Applications where IoT can be deployed |
| 12-3-2021 | 3 | 7 | Applications where IoT can be deployed |
| | | 8 | Benefits of deploying an IoT |
| | | 9 | challenges of deploying an IoT |
| 13-3-2021 | 3 | 10 | IoT components: Sensors |
| | | 11 | front-end electronics (amplifiers, filtering, digitization |
| | | 12 | front-end electronics (amplifiers, filtering, digitization) |
| 14-3-2021 | 3 | 13 | data transmission |
| | | 14 | digital signal processing, |
| | | 15 | choice of channel (wired/wireless) |
| 15-3-2021 | 3 | 16 | back-end data analysis |
| | | 17 | Understanding packaging and power constraints for IoT implementation |
| | | 18 | Sensors: types, signal types, shape and strength |
| 16-3-2021 | 3 | 19 | Sensor non-idealities: Sensitivity and offset drift |
| | | 20 | noise, minimum detectable signal, nonlinearity |
| | | 21 | Read-out circuits: Instrumentation-amplifier |
| 17-3-2021 | 3 | 22 | SNR definition, noise-bandwidth-power Tradeoff |
| | | 23 | Circuit component mismatch |
| | | 24 | mitigation techniques (calibration, chopping, autozeroing etc.) |
| 18-3-2021 | 3 | 25 | Power/energy considerations |
| | | 26 | Basic signal processing (filtering, quantization, computation, storage) |
| | | 27 | Review of Communication Networks |
| 19-3-2021 | 3 | 28 | Challenges in Networking of IoT Nodes, range, bandwidth |
| | | 29 | Machine-to-Machine (M2M) and IoT Technology |

| | | | Fundamentals, |
|---|---|---|---|
| | | 30 | Medium Access Control (MAC) Protocols for M2M Communications 2 of 2 |
| 20-3-2021 | 3 | 31 | Standards for the IoT |
| | | 32 | Basics of 5G Cellular Networks |
| | | 33 | 5G IoT Communications, Low-Power Wide Area |
| 21-3-2021 | 3 | 34 | Networks (LPWAN) |
| | | 35 | Wireless communication for IoT: channel models |
| | | 36 | power budgets, data rates |
| 22-3-2021 | 3 | 37 | IoT Security and Privacy, MQTT Protocol, |
| | | 38 | Publisher and Subscriber Model |
| | | 39 | Cloud computing platform (open source) |
| 23-3-2021 | 3 | 40 | and local setup of such environment |
| | | 41 | Embedded software relevant to microcontroller |
| | | 42 | IoT platforms (enterprise or consumer), user interfaces |
| 24-3-2021 | 3 | 43 | Statistics relevant to large data |
| | | 44 | Linear regression |
| | | 45 | Basics of clustering, classification |
| **Total Classes** | | **45** | |

# Dr Ambedkar Institute of Technology, Bengaluru- 560056
## Future Skill Technologies Under TEQIP-III for Internet of Things Course
### Final List of students

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<div align="center">

**REPORT**

**on**

**TEQIP- III assisted training program on Future Skill Technologies:**

**"Artificial Intelligence and Machine Learning"**

</div>

**<u>Objectives of training program on Future Skill Technologies:</u>**

Artificial Intelligence is a major step forward in how computer system adapts, evolves and learns. It has widespread application in almost every industry and is considered to be a big technological shift, similar in scale to past events such as the industrial revolution, the computer age, and the smart phone revolution.

This course will give an opportunity to gain expertise in one of the most fascinating and fastest growing areas of Computer Science through classroom program that covers fascinating and compelling topics related to human intelligence and its applications in industry, defence, healthcare, agriculture and many other areas. This course will give the students a rigorous, advanced and professional graduate-level foundation in Artificial Intelligence

The TEQIP assisted training program on Future Skill Technology "**Artificial Intelligence and Machine Learning**" for students of Dr. Ambedkar Institute of Technology, Bangalore was inaugurated on 10.03.2021 at 10.30 am. Totally 77 students from different branches, mainly Electronics and Communication Engineering, Computer Science and Information Science attended the inaugural function of the training program. The training included 50 Hours of theory introduction to AI, ML, clusters techniques, Sensors, different interfaces, and communication protocols. The topics covered are as per the syllabus provided by NPIU.

The sessions started from 10.03.2021 with **Harsha.R**, Assistant Professor, Dept. Of ECE, Dr. AIT as the trainer from the session "Introduction to A.I". Various theory sessions were handled by **Dr. Shivaputra**, Assistant Professor, Dept. Of ECE, Dr. AIT as per the schedule.

A proctored online mid-semester assessment was conducted by NPIU on 21.03.2021 and was evaluated by NPIU. The results were communicated to the students as well as the trainers. The performance of the students is found to be good. The conduction of theory and project sessions were successfully completed by the trainers as per the schedule. The Proctored online final assessment is yet to be conducted.

**Outcomes of training program on Future Skill Technologies:**

After undergoing this course, the students will be able to:

- Understand Classical and Modern AI
- Formulate problems as learning problems
- Understand the role of data in modern AI
- Train and evaluate ML-based AI systems
- Program AI systems using modern frameworks

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