

Robotics Masters training and Certificate Program

23rd January – 4th February 2023

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Program Report

Electronics and Communication Engineering Department as well as Computer Engineering Department, SCET-Surat, prepared combined proposal for TEERTH (Training for Excellence, Efficiency and Research towards Higher Education) scheme of Knowledge Consortium of Gujarat (KCG) for organizing professional certificate track and STEAM based training for skill enhancement. Grant was received to host 10 days **Robotics Masters training** and certificate program at SCET from 23rd January 2023 to 4th February 2023. 40 students 2nd, 3rd and 4th year from branches like Electronics and Communication Engineering, Computer Engineering, Electrical Engineering, Instrumentation and Control, Mechanical Engineering, Artificial Intelligence and Data Science participated in the training.

This is a great effort from Knowledge Consortium of Gujarat (KCG), Govt. of Gujarat to make the state's education world open to the vast educational and technological dimensions from Vedas to Web by applying training on multiple subjects such as Knowledge Enhancement Track and Professional Certificate Track under the TEERTH scheme. Under this scheme, training was conducted on various emerging areas of engineering for the students of different disciplines. Experts from ISTEM collective foundation, Ahmedabad Gujarat conducted training for all 10 days in areas of Basic Electronics, Blockzie Block coding for animation, Gears and Mechanical structures for Robots, 3D printing, Mobile App development, Arduino, WiFi module ESP32, Raspberry Pi and Python programming.

Program Dates: 23rd Jan – 4th Feb 2023

Time: 9.30AM – 4.30PM

Venue: Labs of Electronics and Communication Engineering

Program Coordinators: Dr. Nehal N Shah, Dr. Pariza Kamboj

Experts: Mr. Lokraj Pandey, Mr. Faishan Patel

Day wise Program summary

Sarvajani College of Engineering and Technology, Surat successfully hosted, 10 days professional certificate program entitled "Robotics Master Training" as a part of STEAM based training for the skill development fully sponsored by TEERTH (Training for Excellence, Efficiency and Research towards Higher Education) Knowledge Consortium of Gujarat from

23rd Jan – 4th Feb 2023. Training provided exposure for learning new technologies to 40 under graduate students of Engineering.

On 23rd January, the program was inaugurated. Dr. Utpal Pandya, I/C Principal, SCET, welcomed experts and all the participants. Dr. Nehal Shah, Head, Electronics and Communication Engineering, gave brief overview of the program, sponsoring institute KCG, TEERTH scheme and ISTEM collective foundation. Dr. Utpal Pandya and Dr. Maulin Joshi, Processor, Electronics and Communication Engineering, felicitated master trainers Mr. Lokraj Pandey and Mr. Faishan Patel respectively. After inauguration, WhatsApp group of participants were created for sharing resources. All the technical sessions were conducted in computer laboratories of Electronics and Communication Engineering Department. Everyday quizzes were conducted and feedback were taken from all the participants using Google forms.

Day 1: In hands on session on day 1 students were introduced to Blockzie which is online block coding tool. Participants learned making games, making animated stories, making calculators and video sensing using Blockzie. They enjoyed the session and experienced learning with fun.

Day 2: On 2nd day basic Electronics was introduced, which was mostly like revision for engineering students. They worked in Tinkercad and simulated basic circuits and later on they received real practice on actual electronics components like switches, LEDs and 7 segment LED display.

Day 3: On 3rd day participants use Mit App inventor, which is also an online tool using which one can create mobile App for android phone. Participants got an exposure to Touch light App, Language Translator App, Text to speech App, talking Tom app, RGB screen app, camera App, Drawing App, calculator App etc. After learning existing Apps, participants tried to build their own App with various ideas.

Day 4: On 4th day Arduino was introduced. Participants had used Arduino before during their 1st year of engineering but Arduino interfacing with Blockzie was new concept for them. They tried project designing, LED blinking, RGB colors, street light using light dependent resistor (LDR), security project using infra-red (IR), 7segment display, 4x4 keypad etc.

Day 5: On 5th day, session was conducted on Internet of Things (IoT). Students learned magic of IoT, NodeMCU which is used for connecting physical devices to internet using WiFi, LED blinking through webpage, home automation and RFID project.

Day 6: On 6th day session was conducted on Python. Starting from fundamental concept of python, game development and CV function were taught. Participants developed snake game in python.

Day 7: 7th day was Robotics session in which law of Robots, types of Robots were covered theoretically. Introduction to Raspbeery Pi Pico board was given. They used the board and worked with remote controlled car.

Day 8: On 8th day, drones were introduced and their application and classification were covered. Flying concept of drone in Blockzie was covered and participants developed flying drone from drone blocks in simulation. Physical drone was demonstrated and they were given real drone flying practice.

Day 9: On 9th day concept of 3D printing was introduction. Participants learned how to use 3D pen and they created different 3D models using 3D pen. They were also educated designing 3D in Tinkercad, generating g code and preparing for print in cura tool. Finally 3D printer was demonstrated for making designs.

Day 10: During previous nine days, various tools and technologies were covered. Based on learning participants selected projects in a group. They combined two or more technologies in their work. On final day projects were showcased in form of exhibition and best project was identified. Finally, a small completion was conducted in which a common problem statement of creating fun App using Math theme was given to all the participants. Participants used Blockzie and exhibited innovative ideas of playing games and strengthening mathematics.

Valedictory Ceremony:

On 4th February 2023, valedictory ceremony was started at 4.30PM. Dr. Nehal N Shah gave brief summary of 10 days training and extended vote of thanks to experts Mr. Lokraj Pandey and Mr. Faishan Patel for conducting wonderful session and delivering fruitful outcome. Winners were declared for Quizzes, Project Exhibition and Competition and they are felicitated with prizes which are sponsored by ISTEM and SCET respectively. Students were very much enthusiastic and many of them volunteered for giving oral feedback. Finally participation certificates are distributed to all the participants by Dr. Nehal N Shah, Head Electronics and Communication Engineering, Dr. Pariza Kamboj, Head Computer Engineering, Ms. Mayuri, ISTEM Foundation, Prof. Pritesh Saxena, Asst. Prof, SCET and Prof. Chintan Panchal Asst. Prof, SCET.

Overall it was great training program content wise and all participants were joyful.

Thanking you

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Prof. (Dr.) Pariza Kamboj
Professor and Head
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SCET-Surat.

Dr. Hiren Patel,
Principal,
SCET-Surat

Inauguration Ceremony



Participants working with Electronics



Participants working with MIT App Inventor



Participants working with Arduino and Interfacing



Participants working with Robotics



Participants Simulating and Flying Drone



Participants working with 3D PEN and 3D printer



Certificate Distribution



Prize and Certificate Distribution





