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Quarterly newsletter of SANT LONGOWAL INSTITUTE OF ENGINEERING AND TECHNOLOGY, LONGOWAL

(Deemed to be A University, Established by Ministry of Human Resources, Govt. of India)

INSTITUTE ACTIVITIES

22nd ANNUAL CONVOCATION OF SLIET HELD ON 7th March 2020

The 22nd Annual Convocation of the institute for award of degree to the passed out students of different Batches in different streams, was held on 07th March, 2020 in the Auditorium of the Institute. Chief Guest of Occasion, Prof. PremVrat, Pro-Chancellor, NorthCap University, Gurugram and Ex-Director, IIT Roorkee was invited to felicitate the awardee students. Delivering his presidential address, he congratulated the graduating students and praised the discipline and dedication shown by them. Sh. JagdishRaiSingal, Chairman, BOM, graced the occasion as Guest of Honour. He motivated the students to excel in their chosen fields and become entrepreneurs and be flag bearers of 'Make in India' movement. Earlier in the function Prof. Shailendra Jain, Director SLIET while presenting the institutes report, highlighted the numerous achievements of the faculty and students under different field of research, academic, sports and cultural activities during the preceding year. Prof. Shailendra Jain, Director SLIET





and Prof. A.S. Arora, Dean (A) conferred the 35 Ph.Ds, 125 Post-Graduate Degrees and 477 B.E. Degrees to various batches after successful completion the Courses. The toppers of every program were felicitated with Medals and merit certificates by Hon`ble Guests and Director SLIET. On this occasion, all Deans, HODs, members of Senate, faculty, staff, parents and family members of the passing out students were present.

CERTIFICATE AWARD CEREMONY OF SLIET HELD ON 4th March 2020

The Certificate Award Ceremony of the institute for award of Certificate to the passed out students of 2017 Batch in different streams, was held on 04th March, 2020 in the ISTE Hall, Mechanical Block of the Institute. Chief Guest of Occasion, Prof. Paramjit Singh Jaswal, Vice-Chancellor of Rajiv Gandhi National University of Law, Patiala was invited to felicitate the awardee students. The topper students of every trade have been bestowed with Medals by Hon`ble Chief Guest. Prof. Shailendra Jain, Director SLIET and Prof. A.S. Arora, Dean (A) conferred the certificates to 370 students of ICD-2017 batch after successful completion of two-year ICD. On this occasion, all Deans, HODs, members of Senate, Principals of renowned schools of the area, faculty and staff of the institute were present.







ACADEMIC MODULE OF ERP IMPLMENTED

The Enterprise Resource Planning (ERP) has been implemented in the Academic Section. The result of End Term Examination of the institute held in Nov-Dec, 2019 has been declared through ERP, no manual result was declared. The registration of the students has also been done through ERP in place of earlier used paper mode. A helpdesk has also been established in the Academic Section to resolve the problems faced by faculty members and stake holders. Sh. Pankaj, Assistant Registrar (Academics) and Sh. Vinod Kumar, (UDC) have been deputed to tackle the issues related to ERP.

PUNJAB CHILDREN SCIENCE CONGRESS 2020

Punjab children Science congress was organised under the aegis of Punjab Academy of Sciences (PAS) on 8th February 2020 along with the 23rd Punjab Science Congress at SLIET by SLIET Science Club under the coordinator ship of Dr. M.M.Sinha HOD (Physics). Dr. Shailendra Jain, Director, SLIET inaugurated the event and marked his presence in the different sections of the event. The event was a huge success and witnessed the rising talents of school students in various events like model exhibition (working & non-working), multimedia quiz, declamation section and poster presentation. A huge participation of more than 200 students was witnessed from more than 25 schools (govt. and private). Students presented model for traffic control system, double flush system and many more under the working model category whereas the non-working category represented many models for sustainable development.



23RD PUNJAB SCIENCE CONGRESS, FEBRUARY 7 - 9, 2020

The 23rd Punjab Science Congress under the aegis of Punjab Academy of Sciences (PAS) was held at SLIET Longowal from February 7-9, 2020 under the guidance of Dr. Dr. SHAILENDRA KUMAR JAIN (Director SLIET) and the organizing team comprising of Dr. B.K. Kanungo, Technical Chair, Advisor, Dr. A S Dhaliwal (Chairman), Dr. Harish Chopra (Co-chairman), Dr. S SVerma and Dr. P S Panesar as Organizing Secretaries. The theme of the Congress "Emerging Trends in Science and Technology for sustainable development". focuses on generating scientific innovations, processes, technologies and understanding towards sustainable development for giving due representation to the need of science and technology for the sustainable development as well as to give full representation to various flagship programmes of Government of India like Digital India, Skill India, Make in India, Swachh Bharat Abhiyan, Space programmes, Global warming, Water Conservation and Fit India movement etc. for their popularization and successful implementation. Linkages among various scientific organizations need to be strengthened to address all such issues in a given time frame. This was the third time that Punjab Science Congress was organized by SLIET, Longowal(earlier were held in 2002 & 2011). A special feature of Punjab Science Congress for school children, Punjab Children Science Congress was also organized along with on 8th February 2020. The Punjab Science Congress gave representation to all basic and emerging fields of science and technology covered, Agriculture, Biosciences, Biotechnology, Applied Chemistry, Applied Physics, Sugar Technology, Pharmacy, Food Technology, Textile Technology, Chemical, Mathematical, Physical Sciences, Engineering Sciences and Medical and Veterinary Sciences. The congress was inaugurated by Padma Sri Prof. RC Sobti a great educationist, excellent research and able administrator who has been vice-chancellor to Panjab University Chandigarh and Babasaheb Bhimrao Ambedkar University (BBAU). Key note address was delivered by a renowned scientist/engineer Dr. Santokh Singh Bhadesha, CEO Xerox (USA) who has about 300 US patents to his credit. Congress was enriched by the presence of very distinguished speakers in its plenary sessions as well as lead speakers in Technical Sessions. About 200 delegates from different educational organizations registered in the Congress for participation. In three technical sessions, about 43 research presentations were in oral, about 96 papers were presented in the form of two poster sessions and about 37 young researchers presented their research for Young Scientist Awards in different disciplines.



DONATION BY SLIET TO PM CARE FOR COVID-19

With reference to pursuance of the appeal dated 25.03.2020, 04.04.2020 & appeal of MHRD No. A44011/11/2020-E-IV dated 30.03.2020 , **SLIET has contributed a sum of Rs.15,12,303.00** as donation in **PM CARES Fund**, from the faculty and staff, vide UTR No.CBINR52020041610001555 dated 16.04.2020.

The amount was contributed by faculty and staff from their salary of the month of April, 2020 as per the consent of the individual with majority of them donating one day salary.

Director SLIET conveyedhis sincere THANKS to the faculty and staff of the institute.

MOU SIGNED BETWEEN SLIET LONGOWAL AND MERITORIOUS SCHOOL GHABDAN

Memorandum of Understanding was signed between SantLongowal Institute of Engineering and Technology Longowal and Meritorious School Ghabdan(Sangrur) with an objective to help the Meritorious School Students and faculty through exchange programme of the Faculty and Students. Students will also visit the labs of the Institute (SLIET) through which they can be benefitted by exposing themselves about the functioning of the latest equipment. Faculty from SLIET can also visit the Meritorious School and Interact with the Students and Faculty. It will help the Meritorious School Students and Faculty in honing their skills and abilities further and at the same time It will help the Institute in utilization of Infrastructure in an optimum manner. Hence the signing of this agreement will be mutually beneficial and the talent of the country will grow where only Meritorious Students from poor and rural families get admission. This will also augment the Institute and Ministry's flagship Programme of Unnat Bharat Abhiyan.

INTERNATIONAL WOMEN'S DAY CELEBRATIONS - 2020

International Women's Day was celebrated in during the 1st week of March, 2020, vide office Order No. SLIET/ Dean(SW)/ 2546-2549 dated 03.03.2020. Dr. JapPreetKaurBhangu, Professor (M&H) and PO, ICC, was Convener of the programme. Within the available time, the following activities were carried out during the Women's day week long celebrations, 2020:

- 1. Run for fun for Fit and empowered India
- 2. Interactive Workshop on Gender Awareness/ Sensitization
- 3. Health Awareness Interactive Session
- 4. Poster making competition
- 5. Cultural activities







Run For Fun For Fit And Empowered India







Workshops on Gender Awareness/Sensitization were organized for girl students in Girls' Hostels 2 and 3 on March 4th, 2020 Interactive







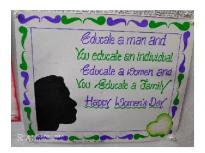
An interactive session on Health Awareness was organized for the Girls Students in Girls' Hostel on March 5th, 2020

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Poster making competition was also organized for the students in Girls Hostel on 5th March, 2020







Cultural activities at Girls' Hostel were organized to mark the occasion of Women's Day Celebrations

AICTE SPONSORED 7 DAYS RESIDENTIAL FACULTY PROGRAM ORGANIZED

AICTE sponsored seven days Residential Faculty Development Program was organized at Sant Longowal Institute of Engineering and Technology, Longowal, Sangrur (Punjab), during 04-10 January, 2020. The purpose of the FDP was to provide acommon platform for the teachers and professionals in the technical institutions to aware the students and inculcate moral and human values among them. Dr. Ajay Pal Singh, Local Coordinator (ECE), welcomed all participants and

gave the overview of the program. Around 55 participants participated in the event.



SLIET ALUMNI MEET 2020

SLIET ALUMNI MEET was organised on 15th Feb.,2020 by Student Alumni Cell and SLIET Alumni Association (SAA). The day started with an interactive session with our respected alumni and students of the institute. The students got privileged by the amazing experiences and stories shared by the alumni. While talking about their time in the institute, the alumni shared their views on the growing industrial requirements in skill wise and personality wise as well. Dr. K S Mann, who himself is one of the alumni acts as the main coordinator of the event. The experiences of the alumni were utterly inspiring and fun.

After this interactive session, the alumni toured the campus and visited their respected departmental buildings. The tour consisted of visiting a newly constructed pneumatic lab being setup by SMC corporation on recommendation of institute's beloved alumni Mrs. Poonam. The lab would be fully equipped with latest machinery and pneumatic devices.

After the departmental visits, the students of Student Alumni Cell were blessed to share lunch with these beautiful personalities. After lunch facilitation ceremony was started. The gathering was addressed by Dr. Shailendra Jain, honourable director, SLIET and Dr. A.S Arora, Dean academics and Prof Sukhcharn Singh, Chairman SAA. Certificate and mementoes were presented to all present alumni and member of alumni cell. The ongoing wonderful day was made priceless when the alumni shared some of their past experiences of classes and mischievous hostel life in front of their own teachers or as they say Gurus. The alumni made the students realize the value of this prestigious institution and how good it felt to be back to their Alma mater.

Before the event was about to wrap up, the alumni cherished their reunion by flashing their moves on the dance floor and reliving the college lives with their forever friends, family, and students. Programme was ended with vote of thanks by Winnerjit Singh, President SAA.





STAR NIGHT UNDER ANNUAL ALUMNI MEET 2020

February 14, 2020 The prestigious institute of Longowal village hosted a stellar **'Star Night'** event under Annual Alumni Meet organized by the SLIET Alumni Association (SAA) and Student Alumni Cell (SAC) at Main Auditorium, SLIET. The star of the evening - *winner of Punjabi Music Best Jury Choice Award*, the legendary folk singer Shri. Kanwar Grewal.

The audience present was a beautiful mix of the alumni, faculties, and their families.

06:00 p.m.| The event commenced with some sizzling performances by the students of the institute. Power-packed dance performances followed by melodious singing performances. Soon after, the NCC Cadet Corps bestowed a soulful poem in memory of Pulwama Martyrs followed by a moment of silence for them.

The event progressed with the welcome address by Winnerjit Singh, President SAA and speech of chairman SAA, Dr.Sukhcharan Singh. He also talked about the importance of the student-alumni bond, various activities of SAA in the campus and outside. Dr. Shailendra Jain, Honourable director SLIET, addressed the audience with his words of wisdom. "The present and future of our college depends on the bond shared by the students and alumni," he said. Later SAA executive body facilitated the Honourable Director Dr. Shailendra Jain, Deans and Chairman SAA. Vote of thanks was presented by Prof Major Singh, Secretary SAA.

06:30 p.m. | The stage was all set; the moment everyone was desperately waiting for arrived. It felt no less than a New Year Eve when the star of the night, Shri. Kanwar Grewal started singing. The harmonious music made the audience go bedazzled. Soon everyone was on their feet and it was like a festival in the auditorium. The star conveyed a very beautiful message to respect parents and teachers unconditionally. Everyone enjoyed to the fullest as the singer sang back-to-back hits.

09:30 p.m. The festival came to its end. The star thanks the college for having him there. The SAA felicitated Shri. Kanwar Grewal with a 'Token of Honour' and captured the moment in a click.





VISIT TO SCIENCE CITY, KAPURTHALA

An educational trip to PUSHPA GUJRAL SCIENCE CITY Kapurthala was organised by SLIET Science Clubon 12thMarch 2020 for ICD students to understand the Basic Principles of Science through Exhibition. Institute bus was provided for this purpose and about fifty students were accommodated for this trip. The selection of 50 ICD students was made on the basis of their performance in a science quiz competition conducted for this purpose. The institute has sponsored all entry tickets for these students and were also provided with refreshment @ Rs. 200/- per person. Students are very happy to see physically through experiment some of very fundamental laws of science. The trip will definitely boost the interest of students in learning science and engineering.



WORKSHOP ON "IOT WITH PYTHON" (2 DAYS WORKSHOP) UNDER TECFEST'20 PRE-ACTIVITY

SoftproTechnologiesPvt. Ltd, organised a workshop on "IoT with Python" on 8 - 9 February 2020. This was one of the premiere workshops organised undertechFEST'20 and attended by 120+ students who dedicated their college off-hours towards developing their programming skills for better employability. The workshop commenced with an introductory session by Ms. YashiAshthana, CEO, SoftproTechnologies Pvt. Ltd who shared her noteworthy experiences with the keen students following which the workshop was headed forward by Mr. Rohit Kumar, who had a unique way of teaching his pupils. He tried to bridge the formal communication gap between teacher & student by removing all sorts of apprehensions & formalities. The workshop was split into three sessions. The session concluded with a hands-on session wherethe students could try out the circuit themselves. The workshop concluded with a valedictory ceremony attended by Hon'ble Director Prof. Shailendra Jain, Dean (Acad.) Prof. A.S Arora, Chairman techFEST'20 Dr. Manpreet Singh Manna and Vice Chairman techFEST20 Ms. AnshukaBansal.





FUN CRICKET UNDER TECFEST'20 PRE-ACTIVITY

The Fun Crisket is ersenized by TECUSEST 20 core committee under pre activity at SLIET. The Director SI

Series in Feb., 2020 by batting the first ball of the Feb., 2020 in SLIET cricket stadium.



International Yoga Day Celebrations at SLIET

The International Yoga day was celebrated by SLIET family (teacher, staff and students) on 21st June, 2020 at their respective home with full enthusiasm and vigour. As per the common yoga protocol issued by AYUSH ministry, Govt. of India, various Kriyas, Asanas and Pranayams were conducted by participants at their respective home or garden. A large number of faculty, staff, students and local residents participated in the session. Different yogic techniques for relaxing body and mind were performed. These simple techniques can be practiced by anyonewhenever he/she is feeling under strain or stress.



One-day workshop on Atmospheric Challenges & Satellite Technology

Unnat Bharat Abhiyan cell and IEEE Student Branch at SLIET organised one-day workshop on Atmospheric Challenges & Satellite Technology and an interactive session on March 3, 2020. The workshop was sponsored by Space Applications Center of ISRO Ahmedabad under its Outreach programme. The school children and teachers of adopted villages under Village Adoption Programme of the institute participated in this workshop. The students, research scholars, faculty and staff members of the institute also attended the programme.



मातृभाषा दिवस कार्यक्रम समारोह सम्पन्न

संत लौंगोवाल अभियांत्रिकी एवं प्रौद्योगिकी संस्थान, लौंगोवाल में दिनांक 24.02.2020 को मातुभाषा दिवस समारोह का आयोजन किया गया। समारोह का उद्घाटन अंधकार को दूर करने के लिए स्वयं को जलाने की तत्परता व प्रतिबद्दता से लैस उपकरणीय प्रतीक दीप का प्रज्वलन कर किया गया जिसकी अगवाई मुख्य अतिथि संस्थान के निदेशक प्रो. शैलेन्द्र कुमार जैन ने की। प्रो. जैन ने अपने उद्बोधन में छात्रों का आहवान करते हुए कहा, "भाषा किसी भी संस्कृति की विरासत व संवाहक होती है और मातृभाषा तो माता की विरासत है जिसमें रचनात्मकता के बीज होते हैं। ये बीज ही उचित वातावरण में अंकुरित होकर समाज, राष्ट्र व सम्पर्ण मानवता की सेवा में अपनी पहचान व्यक्ति के माध्यम से देते हैं। रचनात्मकता को बनाये रखने की जरूरत है। अन्य भाषाएँ सीखी जाती है जिससे विश्व के अन्य भागों से संवाद व व्यवसाय किया जाता है किन्तु उसकी भी आधारशिला अपनी रचनात्मकता ही है। रचनात्मकता की इस अपरिहार्य स्थिति का लाभ उठाने की आवश्यकता है अन्यथा विकास की प्रतिस्पर्धा में प्रतिभा को पिछड़ने की चुनौती सामने खड़ी हो जाएगी।" संस्थान की राजभाषा (हिन्दी) विकास समिति के तत्त्वाधान में आयोजित इस मातुभाषायी संगम में छात्र-छात्राओं, कर्मचारियों, संकाय सदस्यों एवं अधिकारियों ने अपनी मातृभाषा हिन्दी, पंजाबी, मैथिली, उर्दू, भोजपुरी, बंगाली, मराठी, तामिल, मलयालम आदि में विभिन्न विधाओं का मंचन कर दर्शकों को मंत्रमुग्ध कर दिया। इस में छात्र नीलमणि झा एवं खुशींद ने उद्घोषक की भूमिका निभाई। इस अवसर पर यांत्रिक अभियंत्रण विभाग के विभागाध्यक्ष प्रो. राजेश कुमार, प्रो. शंकर सिंह, डा. गुलशन जावा, श्री मोहन कृष्ण सी., श्री मनोज पाण्डेय, श्री सरबजीत सिंह सहित अन्य गण्यमान्य उपस्थित रहे।

विदित हो कि हर वर्ष 21 फरवरी को अन्तर्राष्ट्रीय मातृभाषा दिवस मनाया जाता है। मातृभाषा दिवस के उपलक्ष में छात्र-छात्राओं में अपनी मातृभाषा के प्रति सम्मान व लगाव बनाये रखने हेतु पत्र-लेखन, चित्रांकन, गायन, काव्यपाठ, वाद्य संगीत तथा निबंध लेखन की प्रतियोगितायें आयोजित की गई जिसमें छात्र-छात्राओं ने काफी संख्या में बढ़-चढ़कर भाग लिया। इन प्रतिस्पर्धी कार्यक्रमों में संस्थान के आचार्य डा. पी.के. सिंह व पी.एच.डी. शोधार्थी मो. कलीम अहमद खान, संस्थान परिसर स्थित केन्द्रीय विद्यालय से डा. जीतेंद्र कुमार व इंजीनियर हनुमान सिंह, जवाहर नवोदय विद्यालय, लौंगोवाल से श्रीमित मुक्ता रत्नम सेतिया तथा शहीद भाई दियाला जी पब्लिक स्कूल, लौंगोवाल से श्रीमित रुक्मणी ने निर्णायक मंडल के सदस्य के रूप में सेवा प्रदान की।

अधिष्ठाता छात्र कल्याण प्रो. डी.सी. सक्सेना के मार्गदर्शन में मातृभाषा दिवस आयोजन हेतु गठित सिमित के सदस्यों डा. आर.के.गुहा, डा. दमनजीत सिंह, डा. मोहम्मद माजिद, डा. प्रतिभा त्यागी, श्री मोहन कृष्ण सी., श्री मनोज पाण्डेय, श्री मनदीप सिंह, श्री सरबजीत सिंह एवं श्री जगदीश चन्द के सहयोग से कार्यक्रम सफलतापूर्वक सम्पन्न हुआ।

धन्यवाद ज्ञापन राजभाषा (हिन्दी) विकास सिमिति के अध्यक्ष राज कुमार यादव ने किया। समारोह के अन्त में 15.02.2020 को लौंगोवाल के स्कूल वैन दुर्घटना में काल के गाल में समाये बच्चों की दिवंगत आत्मा की शांति हेतु 2 मिनट का मौन रखकर प्रार्थना की गयी।



FLOWER SHOW IN SLIET NURSERY

A flower show has been initiated by the Horticulture wing of Estate in SLIET Nursery which was formally inaugurated by thy Director SLIET on dated 14/02/2020. Different varieties of flowers have been grown in the pot and in nursery ground including Dog flower, Sand flower, Dahlia, Verbena, Petunia, Gazania, Kel, Dahlia double, Salvia, Dianthus, Calandria, Marigold, Stone flower. The nursery is regularly visited by faculty, staff and SLIET residents including students and work is appreciated in the direction of preserving flora and fauna and natural diversity.



IN HOUSE KITCHEN GARDEN IN GIRLS HOSTEL

To promote sustainability in-house kitchen gardening in Girls Hostel is a brain child of Director SLIET, Prof. Shailendra Jain. The backyard of Mess, GH-01 is being used for Kitchen Gardening, appx. area of 30 square yard has been used to grow different type of vegetables like spinach, Coriander, Fenugreek, Peas, Cabbage and Radish ect. These vegetables are consumed by of the mess of GH-I, II & III for the residents of Girls Hostels. In addition, these vegetables are grown organically, no chemical fertilizer has been used. This is an initiative to bring the students more closer to Mother Nature and to make them aware how to grow their own food. The interested students can carry on their gardening habit. As we all know that gardening offers many opportunities to improve one's life by providing outdoor exercise, and excellent nutrition with home-grown fruits and vegetables. Moreover vegetables that ripen in the garden have more nutrients than some store-bought vegetables that must be picked early.



Institution's Innovation Council(IIC)SLIET activities

SLIET longowal has fully functional Institution's Innovation Council (IIC) as per the directive of MHRD Innovation Cell (MIC). At present, "IIC SLIET-2.0" is under progress. It is a matter of celebration for the SLIET that "IIC SLIET-1.0" was accorded 4-stars rating by MIC and stood fourth in the north region. Recently, four of the faculty members namely, Dr. RK Saxena, Dr. Indraj Singh, Dr. SuritaMaini and Ms. Barasha Mali, attended two days Innovation Ambassador Program in January-2020 organised by MHRD Innovation Cell (MIC). Students are actively participating in different activities of IIC-SLIET. A number of student teams are participating in Smart India Hackathon organised by AICTE under the aegis of IIC-SLIET. A total of nine (9) top performing student teams having atleast one girl student were selected on 25 February, 2020 as per the guidelines of MIC. These nine students teams have enrolled for IIC-National Innovation Contest 2020 organised by MIC, MHRD to promote the innovation ecosystem and to utilize the entrepreneurship and start-up schemes of Government of India.



DEPARTMENT ACTIVITIES

DEPARTMENT OF FOOD & TECHNOLOGY

Development of Machine Vision System

The department developed the Machine Vision System by the students under Self Help Group and this protocol system is being used in the department for food photography.



Department of Computer Science and Engineering

One Day Online Workshop on Machine learning

One day online workshop on machine learning was held by department of Computer Science and engineering on April 16,2020 during the COVOID 19 lockdown period in collaboration with CEPTA.



'Python Workshop' held from 9th Feb. to 22nd Feb. 2020

Workshop was held by SLIET Software Development Club (CSE Dept.) on 9th-22nd Feb. 2020. 'Python Workshop' marked the ending of semester as well as beginning a year of learnings, experiences and applying knowledge practically. This workshop has given students a outlook to the vast Python programming language, to their keen interest. This 14 day event engaged the students on experience of building their own programs and clearing logics, and gaining knowledge off the course. And a hand on collaboration with "CPP Secrets" created a enthusiastic intrigue among the students.



DEPARTMENT OF PHYSICS

EXPERT TALK ONtopic "X-ray fluorescence"

Dr. Devendra Mehta, Professor of Physics, Panjab University, Chandigarh has delivered an expert talk in the department for UG/PG students on the topic "X-ray fluorescence" on "20th Feb. 2020.

DEPARTMENT OF ELECTRICAL AND INSTRUMENTATION ENGINEERING

EXPERT TALK ON "SMART AC-DC GRID"

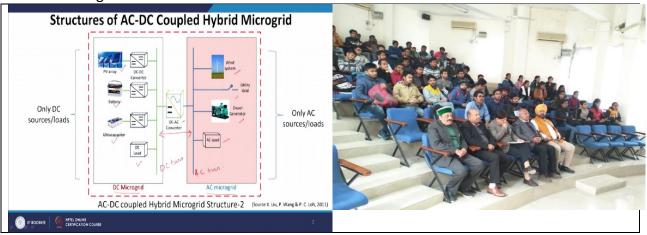
Expert talk delivered by Dr. Narayana Prasad Padhy, PhD, FNAE, FIET, FIE, SMIEEE Professor and Institute ChairDepartment of Electrical EngineeringIndian Institute of Technology Roorkee, India on 04.02.2020.

He discuss very important issue during his talk about AC smart grid, which are the control mechanism, operational mechanism, when it is connected to grid and, also in autonomous or islanded gird operation. He discussed in detail related to DC micro grid, or DC smart grid too. But main focus was on both AC smart grid as well as DC micro grid

He mentioned that just imagine a grid which can act as both AC and DC smart grid, or they are together and, both AC-DC smart grid now can act in line with the utility, or the grid connected mode, or it can also operate in a islanded mode. Now why a why we are looking for AC-DC

smart grid? Most of the generations in specific to PV and fuel cells, they do generate power in DC mode.

And then we need to convert to AC, if you connect to a AC smart grid. Similarly if it is a wind generation that power wind generated at AC and, then we need to convert that to into DC, if it is a DC smart grid.



The Director SLIET, Prof. Shailendra Jain, Dr A.S Arora, Dean (Acad.) and Prof. Sanjay Marwaha (HOD EIE) were also present during the talk along with faculty of EIE and UG/PG students. Dr. Amanpreet Singh CoE IKGPTU Jalandhar was specially invited to attend the session.

SHORT TERM TRAINING PROGRAM ON 'PLC, DRIVES AND INDUSTRIAL AUTOMATION'



A short term training program on 'PLC, Drives and Industrial Automation' was organized jointly by Department of Electrical and Instrumentation Engineering and Department of Electronics and Communication Engineering from March 2, 2020 to March 6, 2020 under TEQIP- III. In the inaugural session, Prof. Shailendra Jain, Director SLIET Longowal was the Chief Guest and Prof. K.V. Gangadharan from NIT Surathkal, Prof. R.K. Garg from NIT Jalandhar and Prof. Rama KrishnaChalla from NITTTR Chandigarh were the Guests of Honour. It was emphasized that there is a need of practical oriented training program in which the hands on training will give more exposure and narrow down the gap for actual industrial requirements. Experts from industries, Mr. Ramandeep Singh Walia (QOS Technologies, Bangalore), Mr. Ashok (SMC) held theory as well as practical sessions. Experts from SLIET and other academic institutes, Prof.

Shailender Jain, Director SLIET Longowal, Prof. A.S. Arora, Dean Academic SLIET, Prof. Sanjay Marwaha, HOD EIE, Prof. ManpreerKaur, Dr. A.K. Aggarwal, Dr. R.K. Garg, Dr. K.S. Nagla, Prof. Umesh Rathore, Prof. SavinaBansal, Prof. R.K. Bansal delivered lectures during these five days regarding PLC, Drives and Industrial Automation. These five days witnessed information packed lectures which were consonant with the latest innovations in the subject. It is the belief of the coordinators Prof. Manpreet Kaur, Prof. AjayPal Singh and Dr. Raj Kumar Garg that the delegates must have been benefitted by the deliberations and reciprocal interactions and this will give them a new direction for their research.

TWO DAYS WORKSHOP ON TOPIC "IOT ON ARDUINO"

"IoT using Arduino: Two Days Workshop" funded by Shastri Indo Canadian Institute was successfully organized on 15th and 16th Feb 2020 by Department of EIE. The event began with the inauguration function where Director Shastri Indo Canadian Institute Dr. Prachi Kaul addressed the participants on Skype. Dignitaries, Prof. K G Srinivasa from NITTTR Chandigarh as the Guest of Honour, Prof. S. K. Jain, Director SLIET Longowal as the Chief Guest, Prof A.S. Arora, Dean Academics, SLIET Longowal, Head of Department, Prof S Marwaha, Faculties of SLIET Longowal and the participants were present at the event.

Prof K G Srinivasa who was also the expert for the day, delivered lectures about IoT, why it is necessary, limitations and its implementation using Arduino. At the end of the day he discussed how to design circuits using an open source software to simulate Arduino projects.

The second day participants were divided into 8 groups and Arduino kits were issued to each group for hands on experience. Barasha Mali, Assistant Professor, SLIET Longowal and the coordinator of the event along with a group of six students helped the participants perform the different Arduino based tasks during the session. Starting from the basic LED blink using Arduino board, the session included different tasks to make the participants familiar with the Arduino board. Tasks like sensing environmental parameters and designing IoT based weather monitoring system was added to fulfill the objectives of the workshop. The day ended with a competition among the participants among which one group was the winner. The valedictory session ended the day where participants were distributed certificates.







DEPARTMENT OF MECHANICAL ENGINEERING An Expert Lecture on "Overview of Tyre Technology"

An Expert Lecture on "Overview of Tyre Technology" was delivered by Sh. Ravi Shanker of Ralson India Ltd., Ludhiana in the Mechanical Engineering Department on 7th February 2020 for the students of ICD, BE and M.Tech. Programme. The event was Co-ordinated by Dr. Rakesh Kumar, Associate Professor, Mechanical engineering Department.



Two days workshop on "Industrial Motivational Campaign for youth"

A Two days workshop on "Industrial Motivational Campaign for youth" has been organized by Department of Mechanical Engineering during 19-20 February 2020. Following resource persons have delivered the expert talk.

S.No.	Name	Organization.	
a.	Er. Rajesh Jain,	National Small Industries Corporation Limited	
	General Manager	(A Govt. of India Enterprise)	
		Technical Services Centre-Rajpura (Punjab) under Ministry of MSME,	
		Govt. of India	
b.	Er. Joginder Singh,	National Small Industries Corporation Limited	
	Development Officer	(A Govt. of India Enterprise) Technical Services Centre-Rajpura	
		(Punjab) under Ministry of MSME, Govt. of India	
C.	Mr. Mukesh Kumar Verma, Assistant Director	Ministry of Micro, Small & Medium Enterprises(MSME),Ludhiana	

		Govt. of India	
d.	Er. Ranjeet Singh Development Officer	District Industries Centre (DICs), Malerkotla, SangrurGovt. of India	
e.	Mr. Harjinder Singh,	Rural Self Employment Training Institutes (RSETi)- State bank of India,	
	SBI Sangrur.	Sangrur	
f.	Er. ArvindSinghy, Entrepreneurship Trainer	School of Research, Education and Entrepreneurship Development,	
		Zirakpur Punjab	



The above event was Co-ordinated by Dr. Rakesh Kumar, and Dr. Anil Singla, both Associate Professors in Mechanical Engineering Department.

Training Programme on "Computer Aided Drafting"

A Training Programme on "Computer Aided Drafting" was organized by Mechanical Engineering Departmentfrom 10-12th February 2020 during 4:30-6:00 PM in Central Computing Lab for the students.

Two Days Workshop On How To Prepare Business Plan And Detailed Project Report

A two days workshop on "How to Prepare Business Plan and Detailed Project Report" was organized by Department of Mechanical Engineering during 02-03rd March 2020 for ICD final year students. The event was Co-ordinated by Dr. Rakesh Kumar, Associate Professor, Mechanical engineering Department.Er. ArvindSinghy, Entrepreneurship trainer was the resource person for the above event.



FACULTY/STAFF ACIEVEMENTS

Keeping up the spirit of "Fit India Movement", Dr. Sanjeev Kumar Garg,

ASP(M&H), participated in Bathinda Half Marathon on March 1, 2020 organised by Bathinda Runners and won Finisher's Medal in the event.

He completed the 21.1 KM marathon in his person best, 2 Hours 4 minutes and 49 seconds.



- A TEQIP-III funded project "Development of Smart System for monitoring surface roughness in turning process" amounting Rs 2.10 Lac has been sanctioned to Dr. Vivek Kumar and Dr. Sunil Kumar.
- Prof. M MSinha has delivered invited talk participants of TEQIP-III sponsored STTP on "Advanced Functional Materials, Characterization & Applications". This STTP was organised jointly by MNIT Jaipur, NIT Uttarakhand& SLIET Longowal at MNIT Jaipur under twinning programme on 4th March 2020.
- Dr. Manpreet Singh Manna Associate Professor of EIE Department was Key Speaker in 14th International Conference on "Rethinking Strategies for Leadership and Governance in Emerging Global Scenario" Prestige Institute of Management and Research, Indore on 12.01.2020.
- Dr. Manpreet Singh Manna Associate Professor of EIE Department delivered a Key Note address in TEQIP sponsored One Day National Workshop on SWAYAM and E-Learning at Guru Nanak Engineering College, Ludhiana on 28.01.2020.
- Dr. Manpreet Singh Manna Associate Professor of EIE Department was invited as Chief Guest in National Seminar "Academia-Industry Collaboration in Madhya Pradesh: New Initiative Problems, Challenges, Opportunities and Strategies for Pharmaceuticals" MPCST Modern Institute of Pharmaceutical Sciences, Indore on 01.02.2020.
- Dr. Manpreet Singh Manna Associate Professor of EIE Department Deliver a Key note Speech in National Seminar on The Skill Development: A Road ahead-Challenges and opportunities at GGN Khalsa college, Ludhiana on 08.02. 2020.
- Dr.Manpreet Singh Manna Associate Professor of EIE Department invited as Chief Guest in One Day National Seminar on 'Revised Accreditation Framework of NAAC' Gobindgarh Public College, Gobindgarh on 03.03.2020
- Dr. Manpreet Singh Manna Associate Professor of EIE Department delivered an Expert talk on NPTEL and SWAYAM at University College of Engineering, Punjabi University, Patiala on 05.03. 2020.



- Paper published by Dimple Rani and Dr.Vinod Mishra of Department of Mathematics on "Numerical Inverse Laplace Transform based on Bernoulli Polynomials Operational Matrix for Solving Nonlinear Differential Equations", Results in Physics 16 (2020), No. 102836, 1-7.
- International Institute of Technical Teachers, Dehradun has conferred IITT Awards 2019 under the category Young Scientist Award to Dr Kamlesh Prasad and Dr. Pradyuman Kumar.
- Verma, Deepak, G., Kimmy& Kumar, Pradyuman& El-Shazly, Mohamed. (2020).
 Unmasking the Many Faces of Giloy(Tinosporacordifolia L.): A fresh look on its phytochemical and medicinal properties. Current Pharmaceutical Design. 26. 10.2174/1381612826666200625111530.
- Dr. Manpreet Singh Manna Associate Professor of EIE Department was Key speaker in International Webinar on Role of Educators during COVID 19 situation organised by JIS University, Kokata West Bangal on 13th April, 2020.
- Dr. J. S. Gill has attended a Webinar/FDP on "Adopting Digital Teaching Methods.
- Prof. Shankar Singh has attended following FDP/Webniars during the lockdown.
 - a) FDP 'Outcome Based Education Software' on 14th May, 2020.
 - b) 'Coronavirus, product design and the supply chain prepare to think differently' webinar on 28th May, 2020
 - c) Webinar on Webinar on Fundamentals of Computational Fluid Dynamics on 9th June, 2020 (10.00 to 11.00 am).
 - d) Webinar on "Manufacturing of Advanced composite materials and their Applications", 9th June, 2020 (12.00 1.00 p.m)
- Dr. Vivek Kumar has attended the following DP/STTP and self paced course during the lockdown
 - a) A One-week online FDP on "MATLAB Applications in Engineering and Science" during 27th April -1st May 2020, organized by GEC Karad and REC, Azamgarh.
 - b) A One-week online FDP on "Machine Learning and Deep Learning Applications in Engineering and Science" during 16th-20th May 2020, organized by GEC Karad and REC, Azamgarh.
 - c) A One-week online FDP on "Pedagogy of Scientific Writing, Reporting and Scholarly Networks" during 19th-23th June, 2020, organized by Feroze Gandhi Institute of Engineering and Tecnology, Raebareli.

- d) Successfully completed the following self Paced course
 - i) MATLAB Onramp
 - ii) Simulink Onramp
 - iii) Machine Learning Onramp
 - iv) Deep Learning Onramp
- Mr. Sumit Kumar has attended a One-week online FDP on "Pedagogy of Scientific Writing, Reporting and Scholarly Networks" during 19th-23th June, 2020, organized by Feroze Gandhi Institute of Engineering and Tecnology, Raebareli.
- Students of Food Engineering and Technology haveParticipated in several events the representative certificates are given below:-





- Dr. Manpreet Singh Manna Associate Professor of EIE Department invited in panel discussion on Opportunity for Online Education organised by All India Management Association, New Delhi on 17th April, 2020.
- Dr. Manpreet Singh Manna Associate Professor of EIE Department invited as Chief Guest in World Telecommunication an information day celebration for key note address online organised by Institutions of Electronics nd Telecommunication Engineers India on 17th May, 2020
- Dr. Manpreet Singh Manna Associate Professor of EIE Department invited as Guset of Honour in International E- Conference 2020 on Navigation the New Normal post Covid-19 organised by IMS Noida on 29-30 May, 2020.
- Dr. Manpreet Singh Manna Associate Professor of EIE Department invited as key note speaker in International Webinar on Technologies Redefining Global Economy: Post COVID-19 organised by Dr. Ram ManoharLohiaAvadh University, Ayodhya on 31.05.2020.
- Dr. Manpreet Singh Manna Associate Professor of EIE Department delivered special webinar on New Jobs for New Tomorrow (placement scenario post COVID 19) organised by Prof. Ram Meghe Institute of Technology & Research, Bandnera-Amravati on 29.05.2020.
- Dr. Manpreet Singh Manna Associate Professor of EIE Department delivered an Expert Talk in Short Term Training Program (STTP) on "Design & Development of MOOCs" under TEQIP-III, at the Department of Computer Engineering, National Institute of Technology Kurukshetra, Haryana on 04.01.2020.

STUDENTS ACTIVITIES/ ACHIEVEMENTS

SLIET TEAM 'JUNKYARD WARRIORS' BAGS 'PRIDE OF PUNJAB' AWARD AT 13TH EDITION OF MAHINDRA BAJA SAE INDIA 2020

Baja SAEINDIA was organized at two different locations namely Pithampur, M.P and Chitkara University, Punjab. 120 teams for main-BAJA participated at Pithampur, Indore, M.P while 80 teams competed at Chitkara University, Punjab. The SantLongowal Institute of Engg. & Technology (SLIET), Longowal team "Junkyard Warriors" (21 team members) under the guidance of Dr Shankar Singh, Professor (Mechanical) as Faculty Advisor (FA) conceived, designed and fabricated a four-wheeled single-seater all-terrain vehicle (ATV), and participated in the Baja SAE India 2020. The Team captain was Ankit Kumar and Vice-captain & Driver Gurjeet Singh. The SLIET 'ATV' (# 58) was driven by Gurjeet Singh, in rough and muddy track, in the endurance race of four hours. The Co-faculty Advisor for this year was Dr Indraj Singh.

SLIET team 'Junkyard Warriors' bagged the 'Pride of Punjab' award alongwith cash prize. The aspirations and efforts of the team are well appreciated and complemented by Prof. Shailendra Jain, Director, SLIET.



SLIET team' Junkyard Warriors' with Director, SLIET and with Hon'ble Vice Chancellor, Rajiv Gandhi National University of Law, Punjab Professor (Dr.) Paramjit S. Jaswal, visits SLIET team' Junkyard Warriors'

SLIET STUDENTS PARTICIPATED IN SANGRUR MARATHON

Keeping up the Spirit of "Fit India Movement", SLIET Students participated in Sangrur Marathon organised by District Olympic



Association Sangrur on 29th Feb. ,2020.

- Three students allocated by 'The Institution of Engineers (India)' had performed their laboratory experiments during 16 January- 07 February 2020 in the Department of Mechanical Engineering.
- Mr. Jastej Singh, research scholar working under the supervision of Prof. A.S. Shahi in the Department of Mechanical Engineering has been conferred with the "Young Scientist Award" for the Year 2019 by the Punjab Academy of Sciences, Patiala in Section-D (Engineering Sciences) at 23rd Punjab Science Congress held at SantLongowal Institute of Engineering & Technology (SLIET), Longowal Punjab during February 7-9th 2020.
- Ms. Mamta Thakur a Ph.D. Scholar (PFE 1603), pursuing her research on "Characterization and Utilization of Bee Pollen to Develop Functional Milk Powder" under the guidance of Dr. Vikas Nanda, Professor, Department of Food Engineering and Technology, has been selected for the Award of "Best Popular Science Story" under "Augmenting Writing Skills for Articulating Research (AWSAR)" program organized by Department of Science and Technology (DST), Govt of India. Her popular science story entitled "Bee Pollen: A Wholesome Food from Bee to We" has been selected for AWSAR Award which includes appreciation certificate and an award of Rs 10,000. Through this story, she demonstrated the valorisation of bee pollen a nutrient-dense beekeeping product, in the Food Processing sector which will not only enrich the nutritional value of processed foods, but also aid in improving the economic status of beekeepers in India.
- For the year 2019-2020, Indian Institute of Chemical Engineers (Northern Regional Centre) has awarded 16 scholarships to the undergraduate students of Chemical Engineering all over India. Each student gets a scholarship of Rs. 20,000/- (Rs. Twenty Thousand only). It is a matter of pride that following twostudents have been awarded merit-cum-means scholarship from our institute:

S. No.	Student Name	Year	Regn Number
1	Mr. Akshay Kumar	4 th year B.E.	1731670
2	Mr. Deepu Kumar Jha	4 th year B.E.	1731680

These students have collected the award money personally on February 15, 2020 (Saturday) during the Golden Jubilee programme held in IIChE(NRC) Auditorium, C-27, Qutab Institutional Area, New Delhi-110016.

ACTIVITIES DURING COVID-19

SLIET CONTRIBUTING TO SOCIETY DURING PANDEMIC COVID19

SantLongowal Institute of Engineering and Technology undertook following activities for welfare of society during the lockdown period of COVID19:

- A. UNDER UNNAT BHARAT ABHIYAN IN THE ADOPTED VILLAGES
 - Helped Old and sick persons
 - Provided Food to the Migratory Workforce
 - Carried COVID19 Awareness Drive
 - Distributed Medical aid to Health workers, Police and Public
- B. Dissemination of Authentic Information to District administration and residents of Sangrur district
- C. More than 9000 contacts were reached via 60+ Whatsapp Groups of sapanchs, patwaries, AshaWorkers and Chemists etc.
- D. Leg Press, touch free Soap/sanitizer based handwashing platform developed in house.



- **E.** All departments released list of exercises/alternatives in lieu of summer internship/industrial training/in-house training.
- **F.** Motivational messages were circulated through Social Media (Facebook, Twitter and WhatsApp) for mental wellbeing of students, from time to time.
- **G.** Series of 5 Online Quiz on "General Service Knowledge/Rules" was organised for institute employees. (Total participants:113 faculty/staff, Certificate: 4 Gold, 5 Silver, 6 Bronze)
 - **H.** Institute conducted Mock Test for online exam from 1-5 Jun, and based on input from stockholders, necessary corrective measures were taken.
 - **I.** Online exams were conducted from 12-24 Jun. 400+ Students appeared
 - **J.** Research and Consultancy Brochure of SLIET is prepared and published.

WEBINARS ORGANISED BY SLIET IEEE STUDENT BRANCH

1. IEEE Student Branch at SantLongowal Institute of Engineering and Technology organized a Webinar on "Faculty and Students Development during Lockdown" on May 17, 2020. Prof. Celia Shahnaz, a TEDx speaker and Chair, IEEE Bangladesh Section delivered a talk on utilizing the online resources for the development of professional, technical and managerial skills during lockdown. A total of 52 participants attended the webinar.



2.IEEE Student Branch at SantLongowal Institute of Engineering and Technology organized a Webinar during lockdown period on "Modelling and Simulation" on May 27, 2020. Prof. Shailendra Jain, Director, SLIET, Longowal and Dr. Ali Kharrazi from International Institute for Applied Systems Analysis, Laxenburg, Austria delivered talks on the theme of modelling and simulation. A total of 74 participants attended the webinar. The talks were followed by discussion on how to use digital technologies in modelling and simulation for the development of new cost-effective products during lockdown.

Webinar Organised on Antenna Design through Simulation using TaraNG 19.1

Department of Electronics and Communication Engineering organised a webinar on Antenna Design through Simulation using TaraNG 19.1on June 14, 2020 during 5:00PM-7:30PM under the guidance of Prof. AnupmaMarwaha. A wide publicity of the webinar was managed by the coordinators of webinar, Dr. AnupmaMarwaha and Er. Kuldeep Singh through social media and personal mail to various engineering institutions. Total of 118 persons including faculties from Institutes all over India, few from abroad and 5 persons from industry joined the webinar.Er. Swapnil Gaul, Founder and Director, Numeregion(Start-up) was the resource person of the webinar. Er. Swapnil Gaul focused on two major areas:

- 1. Interactive pedagogical learning
- 2. Antenna Design through simulation

INITIATIVES TAKEN IN THE CENTRAL LIBRARY DURING LOCKDOWN PERIOD

During lockdown period the faculty and students of the institute were not having access to library print and e-resources. The worthy Director desired that the remote access to the e-resources be made available to the faculty students, so that they canhave access to books, journals, databases at their native place to supplement their online teaching. The efforts were put to get the remote access of subscribed resources and publishers were requested to provide complimentary remote access of their resources. The access to 4703 titles of books have been got activated from the publishers viz.. McGraw Hill (131), PHI (94), Pearson (1802), Taylor and

Francis (523), CBS Publishers & Distributors (458), Wiley India(331), IEEE (Now Foundations, 582) and Cambridge University Press(782). The remote access of e-Journal from the publisher Elsevier (821 Journals) and Springer Nature (1700 Journals) was get activated from the publisher. The Institute is Centrally Funded Technical Institute so the faculty and students of the Institute have access to various e-journals and databases subscribed by the INFLIBNET under e-shodhsindhu consortium. Presently the faculty and students have access to e-journals from ASME (29), JSTORE (3165), Springer Nature (1700) and Web of Science database. A server was set up with the help of ACSS department of the Institute as per the requirement of INFLIBNET to provide remote access to these resources.

The Turnitin has provided complimentary remote access to Feedback Studio and Grade scope complete till 30th June 2020. The feedback studio helps the faculty member to check the similarity in the assignments submitted by the students. The accounts of 176 faculty members were activated to check the assignments submitted by their respective class students during the lockdown period. TheGrammarly Software,research writing tool and Citation Audit tool useful in writing research papers, motivate researchers and scholars to publish more, effectively and efficientlyhas provided complimentary access till 30.05.2020.

WEBINAR CONDUCTED IN DEPARTMENT OF FOOD ENGINEERING AND TECHNOLOGY ON 10 JULY 2020

A webinar has been conducted by Department of Food Engineering and Technology on 10 July 2020 at 4 pm. The webinar started by Dr. Pradyuman Kumar Professor as moderator and Dr. Kamlesh Prasad, HOD has introduced the department and its infrastructure and facilities to the participants. The expert, Dr. BalunkeswarNayak, Associate Professor, Food Processing, School of Food and Agriculture, University of Maine, USA delivered a talk on 'Vision of Sustainable Future Foods in Indian Context'. The speaker focused on food requirements, its processing and need of future foods, how to design and develop a future food.

Total number of registered participants was 646, out of which 100 participants attended the webinar on Google Meet. Most of the participants are faculty members working in different educational institute and persons from industry. Some senior faculty members also attended the webinar namely. Dr. M. B. Bera SLIET Longowal, Dr. Amarjit Kaur PAU Ludhiana, Dr. J. S. Sidhu Kuwait. At the end Dr. Pradyuman Kumar given a vote of thanks to Dr. Shailendra Jain, Director, Dr. BalunkeswarNayak, Dr. Kalesh Prasad, HOD, Dr. Bera, Dr. Sidhu and other participants.



VIDEO LECTURES BY PROF. HARISH CHOPRA AND PROF. R.K. MISHRA FOR STUDENTS

Prof. Harsh Chopra, **Department of Chemistry and Prof. R.K. Mishra**, Department of Mathematics, SLIET, Longowal developed 19 video lectures and 18 video lectures respectively for **UG / PG Students** from the topics of their curriculum so that students can cover these topics without any difficulty. The link for the video lectures is http://sliet.ac.in/2020/06/video-lectures-by-prof-harish-chopra-department-of-chemistry/

CONVERSION OF A NORMAL WASH BASIN INTO LEG PRESS WASH

BASIN AND DEVELOPMENT OF AUTOMTIC SANITZER SPRAY

Department of Mechanical Engineering has designed a concept to convert a normal wash basin into leg press wash basin. The same is in place in the washroom on ground floor in the Mechanical Engineering department and is in operation.

Department of Mechanical Engineering has developed Anautomatic sanitizer spray facility and installed the same in corridor of the ground floor in the department.



DEVELOPMENT OF HAND SANITIZER AND IMMUNE BOOSTERS BY DEPARTMENT OF FOOD ENGINEERING AND TECHNOLOGY

Department of Food Engineering and Technology developed the Effective Hand Sanitizer to meet the demand of the institute during Covid—19 Pandemic.



Department of Food Engineering and Technology developed Immune Booster Drinks based on Giloy Juice, herbal tea, with a combination of more than 7 herbs.



STUDENTS OF FOOD ENGINEERING AND TECHNOLOGY HAVEPARTICIPATED IN SEVERAL EVENTS THE REPRESENTATIVE CERTIFICATES ARE GIVEN BELOW:-



