

## ACHIEVEMENTS DURING 2018-19

### **National Conference on Electronics, Communication and Networking Technologies**

Department of Electronics and Communication Engineering organized National Conference on Electronics, Communication and Networking Technologies under Track V in SLIETCON-19. The event was coordinated by Professor AP Singh Pharwaha and Dr. Ajaypal Singh. Dr. Amod Kumar, Professor, NITTTR, Chandigarh and Ex-Chief Scientist, CSIR-CSIO, Chandigarh, Er. HS Jatana, Scientist-H, SCL, ISRO, Prof. Jagtar Singh from YCOE, Punjabi University, Talwandi Sabo and Prof. Sandeep Singh Gill from GNE, Ludhiana, were eminent external experts in the event. There were four technical sessions in the event covering different areas including Image Processing, Antenna and Electromagnetics Engg., VLSI technology, Optical and Wireless Communication, which were chaired by the above renowned people in the field of Electronics and Communication Engg.. Around thirty participants participated in the event.

For student encouragement first and second-best paper awards were also distributed for every session. Second session was dedicated to “Antenna and Wireless Technology” and first and second awards were given to papers entitled “On the design of tri-band Hilbert fractal antenna for fixed satellite services” and “Investigation of mutual coupling effect over interference suppression in non-isotropic antenna array” respectively.



### **Expert Lectures Delivered By Faculty Members of ECE Department in NIT Uttarakhand (Jaipur Campus) Under Twinning Arrangements**

Faculty members of Electronics and Communication Engg. Department, SLIET Longowal, delivered expert lectures in NIT Uttarakhand (Jaipur Campus), under twinning arrangements to cover the syllabus of their UG students in the month of April, 2019. Er. Vipul Singhal, Assistant Professor (ECE), delivered expert lectures on the topic ‘Waveguides’ whereas Dr. Dilip Kumar, Associate Professor (ECE) and Er. Sarbjeet Singh, Assistant Professor (ECE), delivered expert lectures on the topics ‘Intel 8051 microcontroller’ and ‘Feedback Amplifiers’ respectively.

## **TEQIP-Phase III Sponsored One Week Short Term Training Program RTECE-18 Organized by the Department of Electronics and Communication Engineering**

Electronics and Communication Engineering Department of SLIET Longowal has organized a program under TEQIP-III as a one week short term training program on “**Recent Trends in Electronics and Communication Engineering**” during **24<sup>th</sup> August to 28<sup>th</sup> August, 2018**. Event was coordinated by Prof. AP Singh and co-coordinated by Er. Pankaj Kumar Das under the guidance of Prof. Anupma Marwaha, HOD and chairman RTECE-2018. The STTP was attended by 42 participants including Faculty members, PG students and Research scholars from various institutes and organizations. Prof. Lalit Kumar Awasthi, Director NIT Jalandhar, was the chief guest of the inaugural function. He also delivered key note address for the STTP. Prof. Jagtar Singh from YCOE, Punjabi University, Talwandi Sabo, Dr. Amod Kumar, Chief Scientist CSIR-CSIO Chandigarh, Dr. Balwinder Raj from NIT Jalandhar, Prof. RK Bansal from GZS-PTU campus, Bathinda, Prof. Sukhleen Bindra from GNDU, Amritsar, Prof. Rajoo Pandey from NIT Kurushetra, Prof. Alpana Aggarwal from TIET, Patiala, Prof. Savina Bansal from GZS-PTU campus, Bathinda, Dr. P Prajapati from ADPIT, Gujrat and Prof. Jitender Kumar Chhabra from NIT kurukshetra were eminent external expert speakers for the STTP. Prof. Shailendra Kumar Jain (Director SLIET), Prof. Sanjay Marwaha, Prof. AP Singh, Prof. JS Ubhi, Dr. Surita Maini, Dr. Sanjeev Singh, Dr. AK Aggarwal and Er. Pankaj Kumar Das were speakers from SLIET Longowal. The event was successfully organized with lot of appreciation in local newspapers and electronic media. The Valedictory ceremony on 28<sup>th</sup> August was graced by Prof. Shailendra Kumar Jain, Director SLIET as chief guest and Prof. Ajat Shatru Arora, Dean (Academics) SLIET as guest of honour of the event.



## **TEQIP-III Sponsored 2-Day Industrial Trip Organized by the Department of Electronics and Communication Engineering**

Two Days industrial visit of ALTTC (Advanced Level Telecom Training Centre) Ghaziabad was conducted for UG students by Electronics and Communication department on 30<sup>th</sup> September to 1<sup>st</sup> October 2018. The visit was coordinated by Dr. J.S. Ubhi, Dr. Ajaypal Singh

and two research scholars of ECE department in which 38 students of GEC/16 got good industrial exposure by visiting different labs like optical fiber lab, satellite lab, and mobile communication lab. Mr. M.K. Seth (CGM, ALTTC Ghaziabad) also addressed students and technical lectures on “5G Technology” and “How to Appear for an Interview” was also organized by the training centre. With an aim to go beyond academics and correlating the theoretical fundamentals with real world application, such industrial visit provides student a practical perspective on the world of work.



### **Expert Talk organized by Electronics and communication Engineering Department under TEQIP-III**

An expert talk was organized by the Department of Electronics and Communication in Mini Auditorium Computer block on “How to appear for the interview” on 03-10-2018. Er. M. K. Seth (I.T.S.), Chief General Manager (Telecom), Advance Level Telecom Training Centre (ALTTC), Ghaziabad delivered the talk. Talk was very informative and attended by students of the ECE department as well as faculty members of different departments.



### **TEQIP-III Sponsored Two Day Workshop on “Embedded Systems” organized during October 28-29, 2018 at SLIET, Longowal**

Department of Electronics and Communication Engineering organized a TEQIP-III Sponsored Two Day Workshop on “Embedded Systems”, during October 28-29, 2018. The event was coordinated by Dr. Dilip Kumar and co-coordinated by Dr. Ajaypal Singh under the guidance of Prof. Anupma Marawaha, chairman of the workshop and HOD (ECE). Er. Dushyant Kumar from LPU Jalandhar was the resource person of the event. He highlighted the importance of Embedded Systems, recent trends in it and their challenges. There were three special hands-on training sessions on ‘Python Programming’, ‘Raspberry Pi Processor’ and ‘Interfacing of Raspberry Pi with LED, servo motor, and Ultrasonic Sensor’. Prof. Shailendra Jain, Director, SLIET, Longowal, was the Chief Guest of the valedictory session. The valedictory ceremony was also graced by Dr. K.S. Nagla from NIT Jalandhar, as Guest of Honour, and Prof. A.S. Arora (Dean Academics), SLIET Longowal. Seventy-Six students from Electronics and Communication Engineering participated in the workshop.



**Students Project awarded under TEQIP-III during year (2018-19)**

<b>S.N.</b>	<b>Title of project</b>	<b>Faculty Advisor</b>	<b>Students</b>	<b>Estimated Budget in Rs.</b>
<b>1.</b>	Development of Fractal Patch Antennas for S and C band spectrums	<b>Prof. AP Singh</b>	Deepshikha Priyadarshi (PG/ECE/1750060)	15,000/-
<b>2.</b>	Guardian	<b>Dr. Dilip Kumar</b>	Apurva (GEC/1740622) Shubhi Sharma (GEC/1740621) Amritanjli (GEC/1740631)	43,899/-
<b>3.</b>	Automatic western Loo and wheel chair for differentially abled	<b>Er. Rahul Gautam Er. Kuldeep Singh</b>	Ajay Kumar Saujanya Kalita Adarsh Karn	49,810/-
<b>4.</b>	Design and Development of House-Hold Electronic Gas	<b>Dr. Dilip Kumar Prof. Anupma Marwaha</b>	Panikar Singh (GEC/1640056) Atish Deepankar (GEC/1640062)	40,728/-

	Detector			
5.	Development of Waste Monitoring System(from Smart Dustbin to Dump Yard)	<b>Dr. Surinder Singh</b> Dr. Dilip Kumar	Ishpreet Kaur (GEC/1640092) Km. Beena Singh (GEC/1730981) Anjali Singh (GEC/1730982) Ritika Negi (GEC/1640015)	49,720/-

### Research projects awarded to faculty members during the year(2018-19)

S No	Name of Faculty (Principal Investigator)	Name of the Funding agency	Title of the Project	Sanctioned order no.	Sanctioned date	Amount Received (In figures)	Amount received (in words)
1.	Dr. Anupma Marwaha	DST – FIST	Development of Facility for Electromagnetic Testing and Measurement	SR/FST/ET- I/2018/157	27-11-2018	61 lacs	Sixty One lacs only
2.	Dr. Surinder Singh	SERB, NEW DELHI	Design and Development of Novel Optoelectronic Devices for High-Speed Reconfigurable Optical Access Networks.	IMRC/AISTDF/R&D/P-5/2017	01.02.2018	18,07,080/-	Eighteen Lakh Seven Thousand Eighty Only
3.	Dr. Surinder Singh	DST- RFBR, New Delhi	Optical Metrology of ultra-short pulses for design of flexible MIMO based next generation optical Communication Network.	INT/RUS/RFBR/P-312	11.03.2019	21,48,672/-	Twenty One Lakh Forty Eight Thousand Six Hundred Seventy Two Only

4.	Dr. Surinder Singh	AICTE New Delhi	Design and development of photonics plasmonic biosensor for detection of heavy metals in ground water of Punjab	File No. 8-2/RFID/RPS-NDF/Policy-1/2018-19	13.03.2019	25,00,000/-	Twenty Five Lakh
5.	Dr. Surinder Singh	DST New Delhi,	Design of Photonics Crystal Fiber Biosensor for biochemical and Chemical Applications	RTF/2018/000022	22.04.2019	4,00,000/-	Four Lakhs

### **Expert Talk delivered:**

Dr. J S Ubhi, Professor(ECE),SLIET,Longowal,delivered expert talk on topic "A Pavement way to 5G",on 27th Sept., 2018 in the ECE Deptt. at SLIET Longowal.

### **Research Publications**

#### **Web of Science indexed Journals**

- S.Kakkar, T.S. Kamal and A.P. Singh, "On the Design and Analysis of I-Shaped Fractal Antenna for Emergency Management", IETE Journal of Research, DOI:- 10.1080/03772063.2017.1407270, 1-10, 2018
- Gurmeet Singh, A.P singh, "On the Design of Planner Antenna using Fibonacci Word Fractal Geometry in Support of Public Safety", International Journal of RF and Microwave Computer-Aided Engineering, 1-10, 2018. (SCI Indexed and Scopus Indexed)
- Ashish Kumar, Amar Partap Singh, "Design of Micro-Machined Modified Sierpinski Gasket Fractal Antenna for Satellite Communications", published in *International Journal of RF and Microwave Computer-Aided Engineering*, pp. 1-10 Article DOI: 10.1002/mmce.21786, 2019 (SCI Indexed and Scopus Indexed)
- Ashish Kumar, Amar Partap Singh," Design and optimization of slotted micro-machined patch antenna using composite substrate", *Applied computational electromagnetic society journal*, Vol. 34, Issue.1, pp.128-134, 2019. (SCI Indexed)
- Ashwini Kumar, Amar Partap Singh Pharwaha, "Triple band Fractal Antenna for Radio Navigation and Fixed satellite services using dragonfly Optimization", *Advanced Electromagnetics*, vol.8, no.3, pp.43-49, 2019.

- Gaurav Bansal, Anupma marwaha, Amanpreet Singh, Rajni Bala, Sanjay Marwaha, A triband slotted bow-tie wideband THz antenna design using graphene for wireless applications, *Optik*, Vol 185, May 2019, Pages 1163-1171.
- Harsimrat Kaur, Charanjeet Singh, Anupma Marwaha et al., "Elucidation of microwave absorption mechanisms in Co–Ga substituted Ba–Sr hexaferrites in X-band", *Journal of Material Science: Materials in Electronics(JMSE)*, September 2018, Volume 29, Issue 17, pp 14995–15005.
- Surekha Rani, Anupma Marwaha, Sanjay Marwaha, Utilization of graphene oxide-based microwave absorber for pattern enhancement of patch antenna array, *J. Nanophoton.* Vol. 12(3), July 2018, pp. 036012(1-13).
- G. Bansal, A. Marwaha, A. Singh, R. Bala, S. Marwaha, "Graphene based Wideband Arc Truncated Terahertz Antenna for Wireless Communication", *Current Nanoscience*, Bentham Science Publisher, Vol. 14, June 2018, pp.1-8.
- Sukhbir Singh and Surinder Singh, "A hybrid WDM ring-tree topology delivering efficient utilization of bandwidth over resilient infrastructure" *Photonic Network Communications*, online published, January 2018.
- Veerpal Kaur and Surinder Singh, "Performance analysis of multichannel surface plasmon resonance sensor with dual coating of conducting metal oxide" *Journal of Nanophotonics*, Vol. 12, no. 1, 016012, 13 February 2018.
- Vinod Kumar Verma, K. Ntalianis, Surinder Singh, NP Pathak, "Data proliferation-based estimations over distribution factor in heterogeneous wireless sensor networks" *Computer communications*, vol. 124, pp.111-118, 2018.
- Veerpal Kaur, and Surinder Singh. "A dual-channel surface plasmon resonance biosensor based on a photonic crystal Fiber for multianalyte sensing" *Journal of Computational Electronics*, Vol 18(1) pp.319-328, Jan 2019.
- Veerpal Kaur and Surinder Singh, "Design of titanium nitride coated PCF-SPR sensor for liquid sensing applications" *Optical Fiber Technology*. Vol. 48 pp. 159-164, March 2019.
- Veerpal Kaur and Surinder Singh, "Design approach of solid-core photonic crystal fiber sensor with sensing ring for blood component detection" *Journal of Nanophotonic*, Vo. 13(2), pp. 026011-(1-11), May 2019.
- Elena Anashkina, Vitaly Dorofeev, S.V. Muravyev, Sergei Motorin, Aleksei Vyacheslavovich Andrianov, Arseny A Sorokin, Maksim Koptev, Surinder Singh, and Arkady Kim "Possibilities of laser amplification and measurement of the field structure of ultrashort pulses in the range of 2.7 - 3  $\mu\text{m}$  in erbium-ion-doped tellurite glass fibres" *Quantum Electronics*. Vo. 48(12) pp. 1118-1127, 2018.
- Dilbag Singh, Surinder Singh, Vishal Sharma, Sukhbir Singh and Quang Minh NGO, "Design of XPM based all optical contention detection circuit at 120 Gbps" *Optical and Quantum Electronics*, Vol. 51 pp 215, 2019.
- Surinder Singh, Dilbag Singh, Vishal Sharma, Sukhbir Singh and Quang Minh NGO, "Design of all optical contention detection circuit based on HNLF at the data rate of 120 Gbps" *Optical Fiber Technology*, Vol. 52 pp. 101958, 2019.
- Sukhbir Singh, Surinder Singh, Quang Minh NGO and Amin Malekmohammadi, "340-Gb/s PoISK-DP-DQPSK optical orthogonal modulation format with coherent direct detection foe high capacity WDM optical network" *Optical Fiber Technology*, Vol. 52 pp. 101936 2019.
- Dilip Kumar, Tarunpreet Kaur, [QoS mechanisms for MAC protocols in wireless sensor networks: a survey](#), *IET Communications*, Vol. 14, May, 2019, pp. 1-18. (Impact Factor- 1.779)
- Dilip Kumar, Tarunpreet Kaur, A survey on QoS mechanisms in WSN for computational intelligence based routing protocols, *Wireless Networks*, Vol. 25, March 2019, pp.1-22. (Impact Factor- 2.405)



- Dilip Kumar, Tarunpreet Kaur, Energy Traffic Priority Scheduling MAC Protocol with QoS assurance for Hierarchical WSNs, International Journal of Electronics, Vol. 106, no. 9, April 2019, pp. 1344-1359. (Impact Factor- 1.070)
- Dilip Kumar, Tarunpreet Kaur, Particle Swarm Optimization based Unequal and Fault Tolerant Clustering Protocol for Wireless Sensor Networks, IEEE Sensors Journal, Vol. 18, No. 11, April 2018, pp. 4614-4622. (Impact Factor- 3.076)
- Dilip Kumar, Deepak Prashar, Design and Analysis of Distance Error Correction based Localization Algorithm for Wireless Sensor Networks, Transactions on Emerging Telecommunications Technologies, Vol. 29, No. 12, November 2018. (Impact Factor- 1.25)

### **Scopus indexed Journal**

- Candy Goyal, Balwinder Raj, J S Ubhi, "A Reliable Leakage Reduction Technique for Approximate Full Adder with Reduced Ground Bounce Noise," Mathematical Problems in Engineering, vol. 2018, Article ID 3501041, 16 pages, 2018.
- Candy Goyal, Balwinder Raj, J S Ubhi "Design of Nano Scale Approximate Full Adders for Low Power Arithmetic Circuits" accepted for publication in Journal of Nanoelectronics and Optoelectronics. (SCI Indexed, IF 1.069).
- Satveer Kour, Jagpal Singh Ubhi, "A Novel Approach to Predict Mobility Pattern of Mobile Nodes in Mobile Ad-hoc Networks" accepted for publication in Journal of Scientific and Industrial Research Vol. 77, November 2018.(SCI Indexed, IF=0.557)
- Candy Goyal, Balwinder Raj, J S Ubhi, "A Low-Leakage Energy-Efficient 32-bit Approximate Carry Skip Adder" accepted for publication in Journal of VLSI Technology, Hindawi. (Scopus Indexed)
- Dilip Kumar, Tarunpreet Kaur, Computational intelligence based energy efficient routing protocols with QoS assurance for wireless sensor networks: A survey, International Journal of Wireless and Mobile Computing (Inderscience Enterprises), Vol. 16, No. 2, pp.172-193, April 2019.
- Dilip Kumar, Tarunpreet Kaur, Hybrid Intelligence based Routing Protocols in Wireless Sensor Networks: A Survey, Vol. 9, 2019, pp. 2-15.

### **Other peer reviewed Journals**

- Surekha Rani, Anupma Marwaha, Sanjay Marwaha, "Exploring the feasibility of development of nanomaterial-based microwave absorbers", International Nano Letters, Vol. 8, September 2018, pp. 241–254.
- Sarbjeet Singh, Ankit Trivedi, "Single Precision Floating Point Arithmetic Using Vedic Mathematics" International Journal of Research in Electronics and Computer Engineering Vol.6/Issue No. 4/2018/pp. 445-449.