



**Scheme for Promotion of Academic and Research Collaboration (SPARC) Sponsored One Week Workshop on Metamaterial Antenna Design and Deep Learning Techniques for Modern Wireless Communication**

**17-21, February 2020**



Organised by

**Department of Electronics and Communication Engineering**

National Institute of Technology Tiruchirappalli,  
Tamil Nadu-620015, India

**Coordinators**

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### Course Contents

- Overview of Microwave antenna design and Importance of advanced radiating structures.
- Design aspects of Ultra wide band radiating structures (UWB)
- Introduction to Electromagnetic Metamaterial structures and applications
- Design and analysis of Complementary Split Ring Resonator (CSRR)
- Coplanar waveguide fed CSRR antenna design
- Extended Coplanar Waveguide transmission lines & applications.
- The influence of feed probes on the modes of circular sector Microstrip Antennas
- Deep learning techniques for optimization of the electromagnetic simulation parameters.
- Modern Wireless standards and their significance
- New Radio & Significant 5G use cases
- Optimal selection of electromagnetic full wave simulation packages

### About NIT Trichy

National Institute of Technology Tiruchirappalli is one among the premier Institutions of India and is well known for its high standards in teaching and research. It offers 10 undergraduate and 23 Postgraduate programs in the disciplines of Engineering, Science, Architecture and Management. The Government of India under NIT Act has declared it as an Institute of National Importance. NITT retained its 1st position amongst its 31 counterparts in the country in the National Institutional Ranking Framework (NIRF) 2019 Ranking (Engineering) released by the Union Ministry of Human Resource Development and found place in top 10 in engineering colleges in the country.

### About the Department

The Electronics and Communication Engineering (ECE) Department was established in the year 1968. The vision

of the Department is to provide valuable resources for industry and society through excellence in technical education and research. The Department offers Under graduate, Post Graduate, research degrees (M.S. & Ph.D.) programs. Research in the Department focuses on various disciplines such as Communication systems, Wireless networks, Signal and Image Processing, RF MEMS, Microwave Antennas, MIC, Optical Communication, Photonics and VLSI systems.

### How to Reach NIT Tiruchirappalli

NIT-Trichy is located about 22 km from Tiruchirappalli Junction / Central Bus stand on the Trichy-Thanjavur Highway. The simplest and most economical way to reach NIT-Trichy is by bus. Any city Bus at Tiruchirappalli Junction will take you to the central bus stand. Board Thanjavur bound mofussil or route bus. The journey time from Trichy will be around 40 minutes.

### About the Program

This workshop is being organized by NIT-T, University of Saskatchewan, Canada as part of SPARC project and scheduled at Department of Electronics and Communication Engineering, NIT Trichy, Tamil Nadu. The Scheme for Promotion of Academic and Research Collaboration (SPARC) aims at improving the research ecosystem of India's Higher Educational Institutions by facilitating academic and research collaborations between Indian Institutions and the best institutions in the world from 28 selected nations to jointly solve problems of national and international relevance.

### Objectives of the Program

1. To understand the importance of Metamaterial structures and their applications in electromagnetics
2. To utilize the derived characteristics of Metamaterials into designing advanced antennas.
3. To understand the significance of Deep learning techniques in antenna design
4. To understand the modern wireless standards that are crucial for next generation communication.

**Course Deliverables:** Upon completion, the successful participants will be able to take up small antenna design projects to study experimentally the electromagnetic characteristics of metamaterial structures and their significance.

### Eligibility

The programme is open to Faculty and Students (B.Tech, M.Tech and Ph.D) of AICTE/UGC approved Engineering and Technology Colleges and working professionals in government agencies. Number of participants will be limited to 50.

### Registration

Participants shall make the fee payment for the registration through SBI collect as per their category.

**Fee Payment:** SBI Collect home page-Tamil Nadu-Educational Institutions-Conference and Workshop NIT Trichy- ECE Dept SPARC Workshop.

Category	Registration Fee
Industries & Government Organizations	₹ 3,000
Faculties	₹ 2,500
Research Scholars & Students	₹ 1,500

Completed applications (**Scanned soft copy**) should be sent to the Coordinators by email. Priority will be given on first come first serve basis. Send the completed Registration form to [sparenittece@gmail.com](mailto:sparenittece@gmail.com)

### Important Dates

Last date to send the Application: **31<sup>st</sup> January 2020**  
Date of Intimation : **5<sup>th</sup> February 2020**

### Resource Persons

**Prof.Dr. Anh Dinh** is currently working as Professor in Electrical and computer Engineering at University of Saskatchewan, Canada. His research areas include Wireless sensor network, IoT applications, NIR Sensors, Plant Phenotyping Instrument. He has published more than 25 papers in referred journals.



**Prof.Dr.Seok-Bum Ko** is currently working as Professor in Electrical and computer Engineering at University of Saskatchewan, Canada. Research interest includes VLSI based Wireless System Design/Physical Layer Design, Network Security, IOT, Digital VLSI Design. He obtained 13 patents. He has completed more than 30 R&D Projects in the field of Wireless Communication, FPGA Implementation of multiple Antenna Wireless Communications Systems and VLSI, etc. he has published more than 100 papers in referred journals. He is sole author for 2 books.



**Prof.Dr. Chinmoy Saha** is an associate professor in the Department of Avionics at the Indian Institute of Space Science and Technology, Thiruvananthapuram. His research interests include microwave circuits, engineered materials, and metamaterial-inspired antennas and circuits. He is currently a visiting researcher at the Royal Military College of Canada, Kingston. He is a Senior Member of the IEEE.



### Accommodation

Limited number of rooms in NIT-T hostels available on First Come first Served basis. Cost of boarding and lodging shall be borne by the applicant. Please note that no TA/DA shall be paid for this event by NIT-T.

### Registration form

One Week SPARC Sponsored Workshop on  
“Metamaterial Antenna Design and Deep Learning  
Techniques for Modern Wireless Communication”  
17-21, February 2020

Name of the Participant: \_\_\_\_\_

Department : \_\_\_\_\_

Gender : \_\_\_\_\_

Designation : \_\_\_\_\_

Qualification : \_\_\_\_\_

Organization : \_\_\_\_\_

SBI Collect Reference No : \_\_\_\_\_

Mobile Number : \_\_\_\_\_

Email : \_\_\_\_\_

Accommodation Required: (Yes/No) \_\_\_\_\_

I agree to abide by the rules and regulations governing the Workshop.

Place:

Date:

Signature of the Participant

Mr./Ms./Dr./\_\_\_\_\_ is a student/employee of our Institution and is permitted to attend this programme.

Place:

Date:

Signature of the Head  
Institution with seal