

MTT-S VNRVJIET ORGANIZED A WORKSHOP ON "ADVANCED ANTENNA DESIGN USING ANSYS-HFSS TOOL"

Date: 21st June 2024 to 22nd June

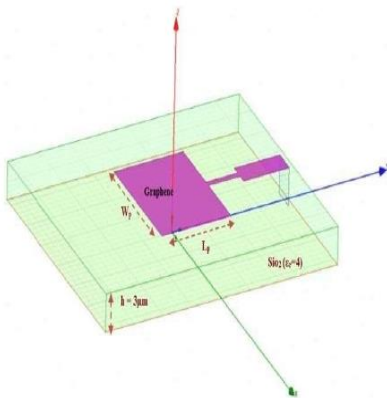
Time: 10AM to 4.30PM.

Venue: Offline

Participants Count: 35

Poster:

**Two-day Hands-On Session
on
"Advanced Antenna Design Using
Ansys-HFSS Tool"
(In-Person)
21st & 22nd June 2024**



For Details Contact:

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About VNRVJIET

Vallurupalli Nageswara Rao Vignana Jyothi Institute of Engineering and Technology (VNRVJIET), is an Autonomous Institute established in the year 1995. With a motto to provide value based higher education at par with international standards, the Philosophy of Vignana Jyothi unravels education as a process of "Presencing" that provides, both individually and collectively, to one's deepest capacity to sense and experience the knowledge. This process along with a conscientious will put Success and Happiness for leading a better future and thus put VNRVJIET at the forefront of academic excellence. This autonomous institution offers 4year UG Programs in 14 disciplines, offers 2-year PG Programs in 14 disciplines and Ph.D. Programmes under AICTE-NDF scheme and JNTUH Research Centre. All the courses are approved by AICTE and accredited by NAAC with A++ Grade (with CGPA 3.73). Institute is recognized under section 2(f) and 12(B) of UGC Act 1956. The Institute is also recognized as "College with Potential for Excellence (CPE)" by UGC. Institute got 113th Rank in Engineering Category in NIRF 2022 and in the band of 151-200 in overall category. Institute got QS I. Gauge 'Diamond' Overall Rating. The Institute is recognized as Scientific and Industrial Research Organization (SIRO) by Department of Scientific and Industrial Research Organization (DSIR).

VNR Vignana Jyothi Institute of Engineering & Technology established the Exclusive Research and Consultancy Centre in the year 2006 for Research and Development in multidisciplinary Engineering and Sciences. The Institute has completed 75 projects worth of Rs.665.68 lakhs, 13 ongoing projects worth of Rs.258.84 lakhs and seven other grants worth about Rs. 112.13 lakhs received from various funding agencies and industry. The research center has exclusive qualified and experienced staff and has fully equipped laboratories.

**VALLURUPALLI NAGESWARA RAO VIGNANA JYOTHI
INSTITUTE OF ENGINEERING & TECHNOLOGY**

An Autonomous Institute & Accredited by
NBA & NAAC with 'A++' Grade
Bachupally, Nizampet (S.O), Hyderabad-500090



**Two-day Hands-On Session
on
"Advanced Antenna Design Using
Ansys-HFSS Tool"
(In-Person)**



**Organized by
Department of Electronics and
Communication Engineering in association
with MTT-Society of VNRVJIET,
Hyderabad.**

ECE Department

The Department of Electronics and Communication Engineering was established in 1995 with recognition from AICTE-New Delhi and affiliation from JNTUH. The department offers one UG program in B. Tech - Electronics and Communication Engineering with an intake of 240, 3 Post Graduate (PG) Programmes in M. Tech -VLSI System Design, M. Tech - Embedded Systems and M. Tech - Defense Technology with an intake of 18 each and Ph. D Programme. UG program is accredited by National Board of Accreditation (NBA). The department is recognized by AICTE and JNTUH as a "Research Centre".

The department has 65 well experienced and qualified teaching faculty members out of which 37 are Ph. D holders, 28 are pursuing Ph. D and the rest are M. Tech holders and, it also has 10 experienced non-teaching staff. Faculty members are experts in various domains like Embedded & IoT, VLSI, Signal Processing and Communication, etc.

The department has 17 well-equipped state-of-art academic laboratories in addition to the Centre of Excellence and Research Laboratories like RFID and WSN Lab, Virtual Reality Lab and Machine Vision Lab, etc. Laboratories are equipped with latest software tools like MATLAB, Synopsys, Mentor Graphics, Xilinx ISE and hardware equipment like mobile station, RF signal generator, Spectrum analyzers, industry compatible FPGAs, PCB printer, etc. Department has an exclusive Departmental library with around 1000 Volumes and e-Learning resources like NPTEL. Our department, with immense experience and fame in research and innovation, is the hub for sponsored projects from both government and private organizations

About the Program

- "Advanced Antenna Design Using Ansys-HFSS Tool" workshop is an invaluable opportunity for participants to gain expertise in a high-demand area, enhance their career prospects, and stay updated with the latest advancements in antenna design and simulation technology.

Schedule:

Day	Time	Topics
Day-1 (21.06.2024)	10.00 AM -12.30 PM	- Introduction to Ansys & HF tools - Design of Coaxial Cable, Waveguide, - Design of Microstrip Transmission Line.
	02.00 PM - 04.30PM	- Design of GPS Antenna - Design of Inset feed ISM band Antenna
Day-2 (22.06.2024)	10.00 AM -12.30 PM	Domain Decomposition of Array Antenna
	02.00 PM - 04.30PM	Design of sub 6GHz Antenna/5G Antenna

Speaker: Kasthuri Patil, Application Engineer, Ansys [HF].

Who can Apply?

Faculty and Students of VNRVJIIET can take part in the program.

Registration

Participants from Electronics and Communications streams are eligible to attend the Workshop.

Event Guidelines to the Participants

Workshop platform: In-Person (Offline)

How to join: All the registered participants must join the WhatsApp group to get updates regarding workshop.

Patrons

- D. Suresh Babu, President, Vignana Jyothi
- Er. J. Seshagiri Rao, General Secretary, Vignana Jyothi

Advisory Committee

- Dr. C. D. Naidu, Principal, VNR VJIIET
- Dr. B. Chennakesava Rao, Director, VNR VJIIET

Convenors

- Dr. Rajendra Prasad Somineni, Professor & Head, ECE

Co-Ordinators

- Dr. Ch. Rajakumari, Assistant Professor, ECE
- Mrs. M. Bhagya Lakshmi, Assistant Professor, ECE
- Mr. G. Kiran Kumar, Assistant Professor, ECE

Details of Event:

This workshop aims to provide practical sessions on "Advanced Antenna Design Using Ansys-HFSS Tool" workshop is an invaluable opportunity for participants to gain expertise in a high-demand area, enhance their career prospects, and stay updated with the latest advancements in antenna design and simulation technology.

About the Event:

Session 1: Guest name: **Kasthuri Patil**

Topic name: "Introduction to Ansys & HF tools and Design of Coaxial Cable"

About: Ansys, a leader in engineering simulation software, offers a suite of tools designed to simulate various physical phenomena. HFSS (High-Frequency Structure Simulator) is one of the key tools in the Ansys suite, widely used in the electronics industry for designing and simulating high-frequency electromagnetic components such as antennas, RF or microwave components, and high-speed interconnects.

Speaker demonstrated step by step procedure to design of coaxial cable as follows. As we first calculate the diameters of inner and outer conductors of coaxial cable so that its impedance would be 50 ohms taking into consideration the dielectric material in between. Draw first the outer cylinder with its surface as outer conductor and its fill as your dielectric where you must choose its material from library. Subtract the diameter of inner conductor from the outer one. Draw another cylinder with same dimensions and orientation as the subtracted cylinder to replace it but this time it will be totally conductor. Choose an excitation port as a circle the same size as the outer cylinder and place it on one cross sectional side of the cylinder. On the other side connect two conductor wires; first wire connecting inner cylinder to radiating patch of the antenna; the second wire will connect the outer surface with ground of antenna.

Session 2: Guest name: Kasthuri Patil

Topic name: “[Design of Circular and Rectangle Waveguide](#)”

About: This module starts with the geometry creation of a circular/rectangular waveguide and covers the simulation steps required to analyze a model in HFSS. This module shows how to determine cutoff frequencies from the 2D plots and how to plot fields for better understanding by visualizing the circular/rectangular waveguide's propagation modes. This module explains how to identify the propagating modes using field distribution plots. This module also compares the results of waveguides with different radii.

Session 3: Guest name: Kasthuri Patil

Topic name: “[Design of Microstrip Transmission Line](#)”

About: This session explains how to create a microstrip patch antenna using the Ansys HFSS Antenna Toolkit. The HFSS Antenna Toolkit is a powerful tool for antenna customization, providing flexibility to select the desired frequency, substrate material, and type of antenna. The HFSS Antenna Toolkit synthesizes the antenna dimensions according to the operating frequency. In this video, the rectangular probe-fed patch antenna is created to be operated at 1 GHz. Additionally, we discuss results such as return loss, gain, and input impedance.

Session 4: Guest name: Kasthuri Patil

Topic name: “[Circular Array Antenna of 2x2 and 3x3 type](#)”

About: The circular microstrip patch antenna has been designed for X-band application by using the HFSS simulator. When the distance between elements in array has been increased then the mutual coupling is decreases and the performance parameters of antenna also increased efficiently. This work give band width equal to 18% and high average gain (7.6 dB) comparative with the single antenna (5.2 dB), this value of gain can be improving by using some of technique to reduction mutual coupling.

Conclusion:

In conclusion, this workshop provides a comprehensive, hands-on learning experience in designing of Coaxial Cable, Circular, Rectangle Waveguide, Microstrip Transmission Line and Circular Array Antenna of 2x2 and 3x3 type for HF applications. Guided by industry expert, participants will gain practical skills and theoretical insights applicable to telecommunications, radar, and satellite communications. This collaboration bridges the gap between academia and industry, fostering innovation and expertise in advanced RF and microwave engineering.

Photos:



