



Electronics & Telecommunication Engineering

Academic Year – 2022-2023	Class: Third Year
Semester – I	Date : 7/11/2022
CO: 6	PO: 1,2,3,5,9,10

Innovative Teaching Methods- Experimental Learning

Title of Innovation method/activity: Antenna Designing using 4nec2 Simulation Software

1. Name of Faculty: Dr. Ulhas Patil

2. Subject: Electromagnetic Field Theory

3. Objective of Method:

1. Students are able to design and implement dipole and Yagi-Uda antenna for different frequency.
2. Observe the radiation pattern, check the response SWR Vs K, Impedance and phase Vs operating frequency and comment on smith chart

4. Topic Covered through Activity:

Dipole and Yagi- Uda Antenna design using simulation software 4nec2

5. Description of method with Benefits (8 – 10 lines) :

Simulation example is given to show the radiation pattern of the designed antenna. In this example, Dipole and yagi-uda antenna is designed and simulate for different frequencies.

Linear wire antennas and Yagi-Uda array antennas are very popular in the field of telecommunication and are widely used now-a-days. In many RF applications it is required to get the desired antenna parameters for better communication. We can easily design any linear wire antennas or Yagi-Uda antenna using “4NEC2” software and simulate various parameters using it . 4NEC2 is one of the most popular antenna design and simulation software. The term NEC stands for “Numerical Electromagnetic Code”. It is a very simple and widely used software for designing and analysing now a days.

Roles and Responsibilities

- **Teacher**
 - Provide the Introduction to all the topic.
 - Aware the student about the length, Breadth, Depth of Topic
 - Provide the Study Material and appropriate guide lines at every stage
 - Remain available all the time during all stages of process.
 - Prepare assessment methodology.
- **Student**
 - Go through all the material provided on particular topic
 - Once topic assigned understand and gain expertise on topic through collaboration.
 - Actively participate individually and contribute by means of discussion, hand-out
 - Share the expertise topic when joins a new group.

6. Assessment Tools & Rubrics :

- **Experimental Result (20%)**
 - Individual experimental result would be checked by teacher as per result
- **Quiz (40 %)**
 - Individual performance would be checked through the quiz.
- **One Page Report / Hand out (40 %)**
 - Individual performance would be checked by teacher according to the rubrics.
- **Overall Individual Performance**
- Final Marks Obtained = $(0.2 * \text{Expt. Result} + 0.4 * \text{Quiz Marks} + 0.4 * \text{Report Marks})$
- Rubrics for Assessment of One Page Report / Hand out
 - Topic Content (60 %)
 - Report (40 %)

Criteria	3- High	2- Moderate	1- Slight
Topic Content	Highly Relevant	Moderately Relevant	Slightly Relevant
References	Highly Relevant	Moderately Relevant	No / Wrong References
Presentation and Writing Skill	Neat , Clean & Grammatically Correct	Neat & clean	Poorly Written

7. Evaluation Sheet

Sn	Name of Student (Individual)	Experimental Result using 4nec2 (5)	Quiz (10)	Report (10)	Final Marks
1	Aditya Murai	5	4	10	19
2	Ahire Abhishek Panditrao	5	5	10	20
3	Ahire Minakshi Ramdas	4	6	10	20
4	Amrutkar Om Prakash	4	4	10	18
5	Bawdhankar Yugant Rakesh	3	5	10	18
6	Bhamare Riya Sachin	5	6	10	21
7	Bhamare Sumit Jagdish	5	3	10	18
8	Khule Sahil Dinkar	3	4	10	17
9	Bhosale Viraj Mahendra	5	5	10	20
10	Chaudhari Om Madan	5	9	10	24
11	Chaudhari Sneha Manoj	5	9	10	24
12	Dashpute Anuja Sandeep	5	3	10	18
13	Deore Nilesh Dattu	5	4	10	19
14	Divate Siddhesh Rajendra	5	4	10	19
15	Duse Nupur Vijay	5	7	10	22
16	Gahivade Mayuri Pramod	5	2	10	17
17	Gangurde Namrata Shantaram	Left			
18	Gangurde Tejas Dilip	5	7	10	22
19	Gharte Sakshi Dnyaneshwar	5	9	10	24
20	Gojare Jyoti Navnath	4	7	10	21
21	Gosavi Shraddha Dattatray	5	6	10	21
22	Jadhav Jay Uttam	5	4	10	19
23	Jagtap Ritesh Mahendra	4	7	10	21
24	Jahdav Monika Jayesh	5	4	10	19
25	Jawale Bhagyesh Pradip	4	1	10	15
26	Kachole Omkar Swapnil	5	1	10	16
27	Kad Roshan Bhausahab	3	2	10	15
28	Kapadi Kunal Pandit	3	5	10	18
29	Kasar Sharvari Bhagyesh	3	4	10	17

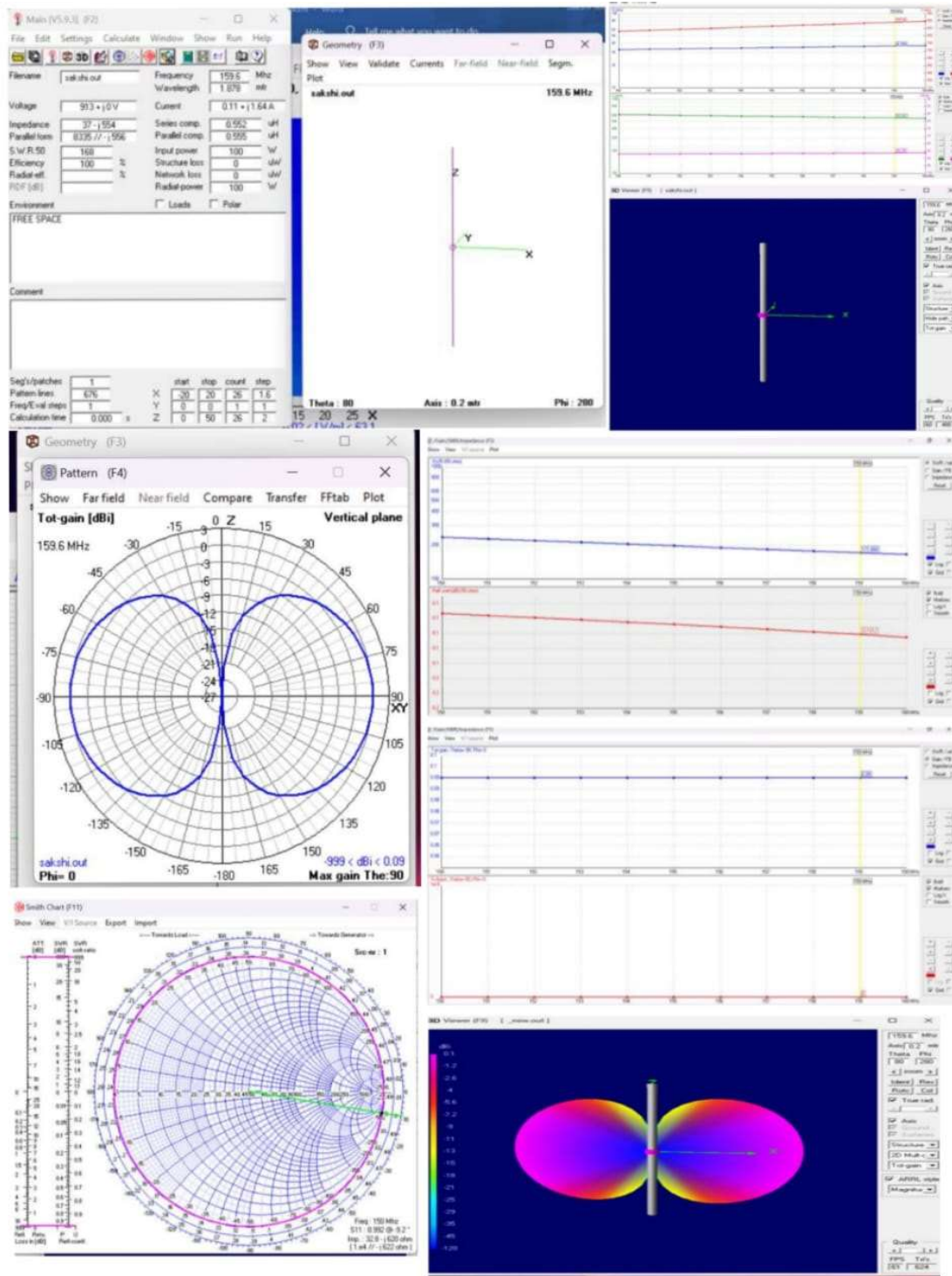
30	Khan Farhan Tufail	3	5	10	18
31	Khole Aakanksha Changdeo	4	4	10	18
32	Magar Aarti Milind	5	2	10	17
33	Medha Sandip Bankar	4	3	10	17
34	Mohit Pravin Chaudhari	5	3	10	18
35	Muthal Shubham Popat	5	6	10	21
36	Ozha Ankita Shivpujan	5	8	10	23
37	Pachpute Garima Rupesh	4	6	10	20
38	Patil Kalyani Jagdish	5	4	10	19
39	Patil Manish Yashwant	3	4	10	17
40	Patil Pranav Prabhakar	4	3	10	17
41	Pawar Nikhil Sanjay	4	5	10	19
42	Porje Shubhangi Madhukar	4	4	10	18
43	Pratik Rao Deshmukh	3	5	10	18
44	Rane Pratik Rajendra	4	8	10	22
45	Sadgir Siddhant Bajirao	4	7	10	21
46	Sakshi Sanjay Musale	5	7	10	22
47	Salekar Samiksha Sunil	5	3	10	18
48	Salunke Pranav Shantaram	5	8	10	23
49	Samruddhi Anil Wadgaonkar	5	8	10	23
50	Shinde Aayush Kiran	5	7	10	22
51	Shinde Geeta Sandeep	5	1	10	16
52	Shirsat Yash Sandeep	5	3	10	18
53	Sonawane Saurabh Anil	5	4	10	19
54	Tejas Anil Bhosale	5	6	10	21
55	Ugale Vaishnavi Bhausahab	5	7	10	22
56	Wadje Vedant Ramesh	5	6	10	21
57	Zinjurde Pratik Nanasaheb	5	5	10	20
58	Chaudhari Rachita Durgadas	5	6	10	21
59	Sonwane Vaishnavi Devendra	5	6	10	21
60	Dhondge Pooja Bhausahab	5	2	10	17
61	Thete Pooja Gokul	5	4	10	19

62	Bhamare Tanvi Manoj	5	5	10	20
63	Goyekar Pravin Bhagwan	5	4	10	19
64	Thete Tejshree Ajit	5	9	10	24
65	Vidhate Sanjana Shashikant	5	4	10	19
66	Sonawane Snehal Balasaheb	5	5	10	20
67	Pagar Tanuja Sharad	5	3	10	18
68	Chavan Arun Prakash	5	3	10	18
69	Kapadnis Prerana Bhausahab	5	8	10	23
70	Ahire Sarika Bandu	5	6	10	21
71	Nikam Rutuja Subhash	5	6	10	21
72	Sonawane Aditya Kanhaiyalal	5	4	10	19
73	Deshmukh Raj Sudhir	5	3	10	18
74	Dhabale Rushikesh Rajendra	4	5	10	19
75	Shinde Udayan Sachin	5	6	10	21
76	Shinde Mansi Madhukar	5	4	10	19

8. Impact Analysis

SN	3- High	2- Moderate	2- Slight
Do you find Methodology Helpful	81.33%	18.66	-
Does this helps for building a good team	76%	24%	-
Does the content covered are relevant	80%	20%	-
Would you like to participate in activity again	76	-	-

9. Activity Picture (Radiation Pattern and Smith chart)



10. For review and critique contact: e-mail address of faculty and HOD

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