<u>**Syllabus for "Design And Analysis Of Microwave Component" (ECE Department)**</u>

Class Coordinators: **Baishakhi Banerjee , PhD Scholar, PMRF Scheme**
Department of Electrical Engineering. Indian Institute of Technology, Kanpur.

Technical Trainer: **Amit Ghosh, Asst. Prof. (RERF), ECE Dept.**

Venue: RERF Campus (Lab - - - Floor)

<u>Sub: Short Term Course on Design and Analysis of Microwave Component (HFSS)</u>

About the Course

This course is intended to give an idea about industry standard simulators in the field of RF and Microwave Engineering. From a basket of simulators, a very popular simulator**AnsysHigh Frequency Structure Simulator (HFSS)** has been selected. The course aims at hands on training on the use of the simulator in design and analysis of microwave components (e.g., Antenna, microstrip line, power divider, array, waveguide, metamaterials unit cells) used in conventional and advanced RF Technologies. The outcome of the course can be summarized as:

- ➢ Learners will be able to identify the application areas of RF and Microwave Engineering.
- ➢ Learners will be able to use HFSS in design of radiating structures.
- ➢ Learners will be able to understand propagation of EM waves at high frequencies through guided medium using HFSS.
- ➢ Learners will be able to visualize measurement strategies used in RF and Microwave Engineering.

Schedule of the Course

Session	Topic	Date	Time
Session-1	Introduction to High Frequency Structure Simulator (HFSS)	Day1	2:00 pm to 4:00 pm
Session-2	Design and analysis ofdipole antenna Using HFSS	Day2	2:00 pm to 4:00 pm
Session-3	Design and analysis of waveguides using HFSS	Day3	2:00 pm to 4:00 pm

Session-4	Design and analysis of microstrip antenna using microstrip line feed	Day4	2:00 pm to 4:00 pm
Session-5	Design and analysis of microstrip antenna using coax feed	Day5	2:00 pm to 4:00 pm
Session-6	Design principles and analysis strategies for antenna array (Linear)	Day6	2:00 pm to 4:00 pm
Session-7	Design principles and analysis strategies for antenna array (planar)	Day7	2:00 pm to 4:00 pm
Session-8	Design and analysis of wilkinson power divider	Day8	2:00 pm to 4:00 pm
Session-9	Design of conformal antenna	Day9	2:00 pm to 4:00 pm
Session-10	Design and analysis of metamaterials unit cells (Absorbers and AMC unit cells)	Day10	2:00 pm to 4:00 pm
Session-11	Full wave simulation of absorptive metasurface for RCS reduction	Day11	2:00 pm to 4:00 pm
Session-12	Antenna measurement strategies for engineers and practical demonstration of microwave measurements using vector network analyzer (VNA) (Original measurement videos will be played for understanding)	Day12	2:00 pm to 4:00 pm
Session-13	Examination (based on the schedule only)	Day13	2:00 pm to 4:00 pm

Note: Some dates andtime can be changed as per regional holiday list, exams, and some emergencies.

Registration link:https://forms.gle/fvy3n18LxXWiyisXA

Software download link (Student Version):https://www.ansys.com/en-in/academic/students/ansys-electronics-desktop-student

Course instructor: Baisakhi Bandyopadhyay, PhD Scholar under PMRF scheme, IIT Kanpur; email: baisakhi20@iitk.ac.in