GUJARAT TECHNOLOGICAL UNIVERSITY

5G/6G Antenna Development

Title:	**2 weeks UG Internship on 5G/6G Antenna Development**
Duration [contact hours]:	02 weeks [05 Days/week, Min. 30 hours]
Mode:	Offline
Fee:	Rs. 2,000/-
Max batch size:	**2**0 students.
Eligibility:	6th Semester Student of B.E./B.Tech of Electronics & Communication, Electronics and its Equivalent
Industry Partner:	Entuple Technologies Pvt. Ltd., Ahmedabad
Internship Coordinator:	Prof. Gautam D. Makwana

Rationale:

- The internship provide to explore development of novel antennas for 5G/6G technologies.
- The internship provide hands on practices on simulation tools, fabrication and measurement of the planar antenna.

Internship Content:

Module	Content	No of Hours	Faculty/Instructor
1.	Fundamental of Antenna: Introduction, Types of Antenna, Radiation Mechanism, Radiation Pattern, Radiation Power Density, Radiation Intensity, Beamwidth, Directivity Antenna Efficiently, Bandwidth, Polarization, Input Impedance, Radiation Efficiently, Friss Transmission Equation and Radar Range Equation	03	Prof. Gautam D. Makwana Mr. Kush Parikh, Entuple Technology Pvt. Ltd
	Microstrip Antenna: Introduction, Microstrip Line, Rectangular Patch, Circular Patch, Feeding Techniques	03	Prof. Gautam D. Makwana, Mr. Vishal Kharadi, Entuple Technologies
2.	Hands on Practice on ANSYS HFSS Simulator Tool, Implement of Microstrip Line	06	Prof. Gautam D. Makwana, Mr. Kush Parikh Mr. Vishal Kharadi
	Implement of Microstrip Rectangular Patch Antenna, Circular Patch Antenna using the simulation tool		
	Analysis of Antenna Parameters and Numerical Study of the patch antennas		
	Design of Novel Antenna for 5G, 6G, and emerging technologies	06	

	Implement of Novel Antenna using the simulation tool		
	Analysis of antenna parameters and numerical study of the novel antenna		
3	Fabrication of the Antenna using the substrate materials	15	Circuit India Pvt. Ltd., Gandhinagar
	Antenna Measurement Techniques and Introduction of Vector Network Analyzer, Anechoic Chamber,		Prof. Gautam D. Makwana Mr. Kush Parikh,.
	Measurement Setup, Measurement of Return Loss, VSWR Bandwidth, Radiation Pattern, Gain, Radiation Efficiently		Prof. Gautam D. Makwana Mr. Kush Parikh Mr. Vishal Kharadi

Learning Outcome:

After completion of the Internship, Students will be able to:

No	Course Outcomes	RBT Level*
01	Understand of antenna parameters and various patch antenna	UN
02	Apply the antenna techniques using EM Simulation Tool	AP
03	Implement of patch antennas using the Simulation Tool	AP
04	Analysis of antenna parameters using the Simulation Tool	AN
05	Validation of the design antenna using Vector Network Analyzer	AN

*RM: Remember, UN: Understand, AP: Apply, AN: Analyze, EL: Evaluate, CR: Create.

****