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### Contents of Modules of Antenna Trends

S.No.	Module Name	Topics
1.	<b>Antenna Fundamentals and Basic Antenna Configurations</b>	Radiation from short current element; Basic antenna parameters: radiation pattern, directivity, gains radiation resistance; radiation from small loop; linear antennas; monopole antennas; radiation from planar apertures; waveguide and horn antennas <i>Simulation experiments on: Dipole and loop antenna; Radiated fields from aperture antenna.</i>
2.	<b>Planar Antennas</b>	Basic microstrip antenna elements: different feeding techniques; transmission line and cavity models; broadband, multiband and compact microstrip antenna elements; PIFA (planar inverted F antenna) <i>Simulation experiments on: Rectangular and circular microstrip antenna elements, multiband planar antennas, PIFA</i>
3.	<b>Antenna Arrays and Beamforming</b>	Introduction to antenna arrays, principles of pattern multiplication; uniform one dimensional array; broadside and end-fire arrays; Binomial and Chebyshev arrays; Fixed beamforming networks, switched beam antennas, Adaptive arrays and smart antennas. <i>Simulation experiments on: uniform one dimensional arrays, switched beam and adaptive antennas</i>
4.	<b>Reflector antennas for radar and satellite communication</b>	Paraboloidal reflector antennas: axisymmetric and offset, different efficiencies, calculation of radiated field; low cross-polarization feed; High gain dual reflector cassegrain antennas, Examples from radar and satellite communication application. <i>Simulation experiments on: Paraboloidal axisymmetric and offset reflector antenna</i>
5.	<b>Emerging trends in antenna technologies</b>	Flexible and Wearable antennas; Implantable antennas; Antennas for 5G, UWB and Terahertz.

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