




 Coordinator	 INSTITUT D'ÉLECTRONIQUE ET DE TÉLÉCOMMUNICATIONS DE RENNES					 K. Mahdjoubi IETR (ID 13.)					 European School of Antennas				
Involved institutions	Université de Marne La Vallée (UMLV), France  														
Name of the course	Microwave and millimeter wave antenna design										Type				
											M	D	A/D	A	
Place	IETR - Rennes, France										Date: 16-20 May 2005				
Summary	<p>The course is divided into two parts. The first part (16 Hours) provides the student with a large overview on planar antennas applications, physical principles and technology. Emphasis is put on technological aspects (microstrip, microtechnologies,...) and specific field of applications (Satellite antennas, mobile phones, base stations,...). The structures and parametric studies presented in the course are validated by CAD softwares (HFSS, Ansoft Designer, ...) and might be re-used by the student for further developments. This course also provides the required details to design microstrip antenna and highlights the most pressing issues in telecommunication area, including broadbanding, circular polarization, and active microstrip antennas in particular. Special design challenges, ranging from dual polarization, high bandwidth, and surface wave mitigation, to choosing the proper substrate, and shaping an antenna to achieve desired results are covered.</p> <p>The second part (16 Hours) is devoted to millimeter wave antennas and describes the main features and specificities of millimeter wave frequency range such as: technological and realization difficulties, antenna measurements, need to characterize the dielectric materials, etc. The students will also see other types of mm-wave antennas and arrays than the printed antennas, including lenses, reflectors, leaky-waves, dielectric resonators, dielectric rods, Gaussian Beam Antennas, EBG antennas, etc. Finally, the civilian, military, automotive and medical application of mm-wave antennas will be presented. The course is accompanied by measurements in mm-wave anechoic chamber and impedance measurements on VNA (Vector Network Analysers). For the lab and simulation parts, the attendee will be divided in groups of small number. the number of groups and therefore, the total number of students will be limited.</p>														
Structure of the course	Lectures	Experimental labs.		Computer exercise		Total		Credits		Assessment typology					
	21h	11h				32h		2		Lectures 1 cr Lab 1 cr					
Teachers	Name					Organization					Title				
	Jean-Marc Laheurte					UMLV					Prof.				
	Marjorie Grzeskowiak					UMLV					Ass. Prof				
	M. Himdi, M. Drissi, K. Mahdjoubi					IETR					Prof.				
	O. Lafond, R. Sauleau					IETR					Ass. Prof.				
	L. Le Coq, J.M. Floch					IETR					Eng.				
	S. Chainon, S. Collardey					IETR					Dr.				
Availability of dedicated structures	College rooms			Dedicated Labs			Classrooms			Computer rooms			Canteen		
	yes ■	not		yes ■	not		yes ■	not		yes ■	not		yes ■	not	