MILLIMETER WAVE TECHNOLOGY

PROF. MRINAL KANTI MANDAL

Department of Electrical and Electronics Engineering

IIT Kharagpur

PRE-REQUISITES : Basic knowledge of Electromagnetic Theory

INTENDED AUDIENCE : Any interested learners

INDUSTRIES APPLICABLE TO : ISRO, DRDO

COURSE OUTLINE :

Future communication networks require significantly increased bandwidths in order to cope up with the ever increasing number of wireless devices and high data throughput. Today's millimeter wave technology is mature enough to handle this requirement. Millimeter wave components are usually realized by frequency scaling the microwave components. However, an engineer has to deal with several design challenges in terms of higher loss, high signal-to-noise ratio, signal distortions etc. while implementing a millimeter wave system. Primary focus of this course is to discuss the design issues at millimeter wave frequencies.

ABOUT INSTRUCTOR :

Prof. Mrinal Kanti Mandal obtained B. Tech. and M. Tech degree from Radiophysics and Electronics in 2001 and 2003, respectively, and PhD degree from IIT Kharagpur in 2008. From 2007-2009, he worked as a Research Fellow in the Institute for Infocom Research, A-STAR, Singapore. He joined University of

Qubec at Montreal in 2009 and Ecole Polytechnique de Monteral in 2010 as a postdoctoral fellow. At present, he is working as an assistant professor in the department of E and ECE, IIT Kharagpur since May, 2012. He has authored and coauthored 59 research articles of which 20 are in different IEEE journals. His current research interest is microwave and millimeter wave circuits. He is a senior member of IEEE since 2013.

COURSE PLAN :

Week 1**:** Introduction to Millimeter Wave Technology

Week 2**:** Guiding Structures at Millimeter Wave Frequencies

Week 3**:** Guiding Structures at Millimeter Wave Frequencies

Week 4**:** Millimeter Wave Antennas

Week 5**:** Millimeter Wave Components

Week 6**:** Millimeter Wave Devices

Week 7**:** Millimeter Wave Propagation

Week 8**:** Millimeter-wave systems