

Area/Group name: Wireless and Optical Communication

Wireless and Optical Communication group of ECE department is broadly working on three major components of a wireless communication system: transmitter, receiver and communication channel. The requirements of future 5G communication systems are expected to be met by Filter Bank Multi-Carrier (FBMC) and Universal Filtered Multi-Carrier (UFMC) systems and group is focusing on development of new algorithms for transmitters and receivers. Group has also developed improved algorithms for 4G Communication systems. Main thrust of the above work has been improving spectral efficiency and to simplify the transmitter and receiver designs. This will reduce RFI to other users, reduce biological hazard and also improve compatibility with other systems. Improved channel models are given and their performance is being analysed using latest digital modulation schemes. New methods to evaluate their performance are also developed. This helps in design of optimum signal processing and modulation techniques at the transmitter. Work has also been done on various security and privacy issues related to next generation wireless networks including Free Space Optical Communication (FSO) and Cognitive Radio Networks. Group is also extending the research work on UWB, millimetre wave propagation for 5G cellular networks, Beam forming, Massive MIMO communication systems, and other emerging areas of wireless and optical communication.

Currently, 10 faculty members are working in this broad area. Twelve Ph.D.s and 2 PG students have been working in the area. Around 155 research papers in reputed International Journals and many more conference papers, book chapters have been published in this area by the faculties and students of the department of ECE, JIIT.