CT 503: Wireless Communication
DA-IICT, Winter Semester 2019-2020

Instructor: Abhishek Jindal

Course Credits (L-T-P-C): 3-0-2-4

Lecture Timings: TBD

Laboratory Timings: TBD

Prerequisites: Digital Communication, Probability & Stochastic Processes. For the laboratory, simulations associated with a basic communication system in MATLAB must be known.

Overview: Wireless Communication is at the heart of most of the critical applications in real world systems today. For a wireless system engineer, it is important to understand the bits and pieces of the transmission and reception phenomenon i.e., the physical layer of wireless communication. This course caters to this need at the fundamental level. Basically, it deals with the theoretical concepts of wireless communication. After doing this course, the student shall understand the evolution of 2G to 5G.

For overall learning, the theory will be supplemented with simulations, which will allow the student to understand how the theory component translates in real time operation.

Course Contents:

- Preliminaries from Digital Communication
- Wireless Channel Modeling
- Diversity Concepts
- Capacity Evaluation
- MIMO Systems
- OFDM Systems
- Spread Spectrum Systems

The sub-topics within the topics above will be interleaved from the references given below. Hence, the interested may refer the references below for further information.

Self-Study Component: The student is required to study a research article assigned by the instructor. During the end of the course, the study needs to be presented through associated simulations.
Tutorials & Laboratory: The course has both the components. Analytical problems will be regularly given to be solved. In the laboratory, the different components of the system under study need to be simulated. Performance analysis and optimization will be the primary focus.

Course References:

3. *MIMO Wireless Communications*, Ezio Biglieri et. al., Cambridge University Press.

Evaluation Policy

- In-Sem & End-Sem Tests: 60%
- Laboratory Performance: 15%
- Self-Study Performance: 15%
- Tutorial & In-class Performance: 10%