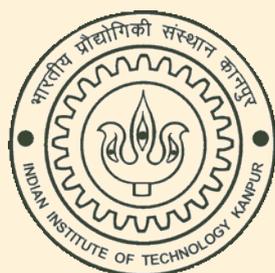
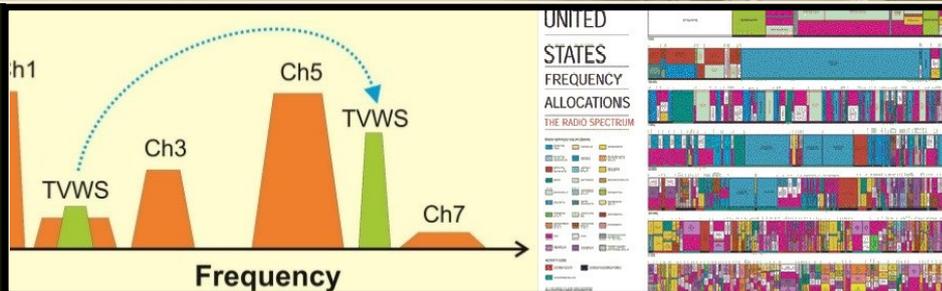


**Short Course
on Spectrum Sensing for
MIMO-OFDM Cognitive
Radio Systems**



Important Dates

Course Dates

April 21st - 23rd, 2017

Last Date for Registration

April 12th, 2017

Venue

Seminar Hall,
Pioneer Batch Building,
Visitor's Hostel,
IIT Kanpur

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Cognitive radio (CR) based systems and networks are a revolutionary new concept in wireless communications, designed to meet the challenges posed by the proliferation of wireless multimedia applications, which have led to a tremendous increase in the demand for higher data rates in current and upcoming 4G/5G wireless communication systems. The cognitive radio paradigm allows a set of unlicensed secondary users to opportunistically access unused spectrum bands licensed to primary users, thus radically improving the efficiency of spectrum usage. These networks can dynamically allocate spectrum to multiple users, thereby easing network congestion.

Cognitive radio devices require powerful signal processing capabilities to sense the presence of vacant spectral bands, termed as *spectral holes* or *white spaces*. Coupled together with cutting edge wireless technologies such as MIMO-OFDM, cognitive radio technology can meet the growing wireless broadband demands of billions of users worldwide by efficiently utilizing spectrum resources in wireless networks, which are scarce and expensive.

CR is a cutting edge technology for wireless communications and requires the design of novel spectrum sensing schemes which have a high degree of reliability, even at low SNR. This course will comprehensively cover several different aspects of spectrum sensing for CR systems, especially based on MIMO-OFDM technology. Starting from a basic introduction to CR networks and MIMO-OFDM based Physical Layer (PHY) design, the various modules will provide elaborate knowledge of various Spectrum Sensing techniques such as Matched Filtering, Energy Detection, Cooperative Sensing, Eigen value-based Sensing, Cyclostationary Sensing and several others. All the classes will be conducted in "classroom" style towards building up the various theoretical aspects beginning with the fundamentals, together with problem solving sessions to further enhance and consolidate understanding. Also, an interactive MATLAB/ SIMULINK module will introduce the participants to the practical implementation and simulation aspects of spectrum sensing especially for MIMO-OFDM systems. A one-day mini-project will also be conducted (on 24th April, 2017), for interested participants, to provide hands-on training on the latest in MIMO-OFDM cognitive radio research.

Target Audience

- Ph.D. scholars pursuing research in Wireless Technologies
- M.Tech/ B.Tech students doing thesis/projects in Wireless Technologies
- ECE/EEE Faculty of Government and Private engineering colleges/ universities
- Engineers from Wireless Industry and R&D Institutions

For more details and registration information, visit the website

<http://www.iitk.ac.in/mwn/spectrum/>