11th September, 2019

Dear Prof./ HoD/ Student,

A 5-Day course on “Massive MIMO, Cooperative Communication and Cognitive Radio for 5G” is being organized in Visakhapatnam by the Department of Electrical Engineering IIT Kanpur, in association with Andhra University College of Engineering, from January 6th to 10th, 2020. This course will comprehensively cover the various analytical and implementation aspects of the latest Massive MIMO, Cooperative Communication and Cognitive Radio technologies, which are expected to play a key role in 5G. The course is focused toward B.Tech/ M.Tech students, Ph.D. scholars, faculty and personnel from industry/ R&D establishments interested in pursuing research and practical deployment of 5G technology. In addition to detailed lecture slides, tutorial assignments, solutions, participants will also have the opportunity to work on practical MATLAB projects and will be given the relevant program code. More information regarding the course can be found at the website below

http://www.iitk.ac.in/mwn/vizag/index.html

I request you to display the course flyer in your institution. Topics to be covered are listed below

1. Principles of Wireless Communication
2. Fading Channels, Bit-Error Rate (BER) Analysis
3. Multiple Antenna Systems, Diversity Concept
4. Multiple-Input Multiple-Output (MIMO) Technology
5. Orthogonal Space Time Block Codes (OSTBC)
6. Cooperative communication, Optimal combining
7. BER Analysis for Cooperative Communication
8. Introduction to Massive MIMO
9. Massive MIMO Analysis with Perfect CSI
10. Channel Estimation in Massive MIMO, Imperfect CSI
11. Multi-cell Massive MIMO and Pilot contamination
12. New modulation schemes for 5G: Spatial Modulation
13. Space Shift Keying, Generalized Spatial Modulation
14. Cooperative MIMO, Multi-node Cooperation
15. AF and DF Protocols for Cooperation
16. Introduction to Cognitive Radio, OFDM for CR
17. Spectrum Sensing in Fading Channels
18. Spectrum Sensing for MIMO systems, OFDM systems
19. Cooperative Spectrum Sensing, Eigen Spectrum Sensing
20. Multi-user Transmission in CR Systems
21. MIMO for Underlay CR Systems
22. Game theory for Cognitive Radio, Spectrum Auctions
23. MATLAB Project on Fading Wireless Channels, Multiple-Antenna Systems, MIMO Systems and OFDM Systems
24. MATLAB Project on Massive MIMO Systems and Receiver Design with Perfect/ Imperfect CSI
25. MATLAB Project on Cooperative Communication, MIMO Cooperation, Multi-Node Cooperation
26. MATLAB Project on Spectrum Sensing for Fading Channels, Spectrum sensing for MIMO-OFDM Systems

Please do not hesitate to contact us for any further information

Thanking you,

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