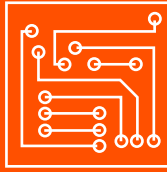


EVOLUTION OF AIR INTERFACE TOWARDS 5G



**ELECTRICAL
ENGINEERING**



PROF.SUVRA SEKHAR DAS
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IIT Kharagpur

- TYPE OF COURSE** : New | Elective | PG **COURSE DURATION** : 8 weeks (25 Feb'19-19 Apr'19)
INTENDED AUDIENCE : Senior undergraduate students, graduate level students, MS and PhD students **EXAM DATE** : 27 April 2019
PRE-REQUISITES : Digital communications, Mobile Communications / Wireless Communications
INDUSTRIES APPLICABLE TO : All wireless telephony service providers and equipment manufactures.

COURSE OUTLINE :

Air Interface is one of the most important elements that differentiate between 2G, 3G, 4G and 5G. While 3G was CDMA based, 4G was OFDMA based; this course reveals the contents of air interface for 5G.

While 4G brought in a deluge of infotainment services, 5G aims to provide extremely low delay services, great service in crowd, enhanced mobile broadband (virtual reality being made real), ultra reliable and secure connectivity, ubiquitous QoS, and highly energy efficient networks.

ABOUT INSTRUCTOR :

Dr. Suvra Sekhar Das, is currently serving as Associate Professor in the G. S. Sanyal School of Telecommunications at IIT Kharagpur. He has authored three books in the domain of Air Interface for 4G / 5G. He has 10 patents in the domain of wireless communications. He has more than 75 publications in International journals and conferences. He has developed several massive online open course ware and virtual laboratories which are widely used resources for developing expertise in the design and development of wireless communication systems.

COURSE PLAN :

- Week 01** : Evolution of wireless communication towards 5G
- Week 02** : Waveform in 5G, (W-OFDM, F-OFDM, UFMC, FBMC, GFDM, adaptive OFDM)
- Week 03** : Modulation and coding in 5G
- Week 04** : Propagation Characteristics of 5G Channel models
- Week 05** : MIMO communication essentials
- Week 06** : Massive MIMO in 5G (massive MIMO, pilot contamination, Beam forming)
- Week 07** : Heterogeneous Ultra Dense networks in 5G, (Small cells, D2D, MIMO-NOMA)
- Week 08** : Ubiquitous Quality of Service Provisioning for real time traffic