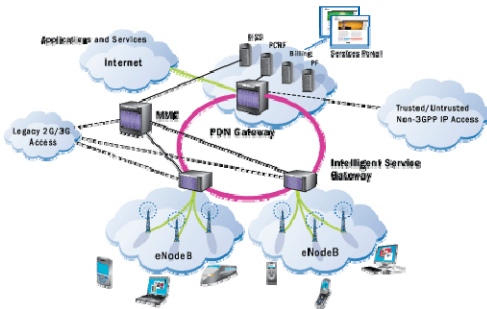


# EE624 - INFORMATION AND CODING THEORY FOR WIRELESS COMMUNICATIONS

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Radical advances in the last two decades have led to the rapid rise and global embrace of wireless mobile communications. These breakthroughs have ushered in a revolutionary new era in Telecommunications. Beginning with modest voice call data rates of 10 Kbps in 2G GSM/CDMA systems, wireless technologies have steadfastly progressed to 3G data rates of 5-10 Mbps in modern UMTS/HSPA networks. Moreover, unlike conventional telecommunication networks, modern day networks are fully integrated into packet switching based data access networks supporting a wide gamut of services including VOIP, Video Streaming, Interactive Conferencing, high speed internet access and many others. Today the communications world is poised on the brink of achieving data rates in excess of 100-500 Mbps through 4G wireless technologies of LTE and WiMAX.

This technology revolution has been made possible through the development of revolutionary Error Control Coding strategies such as Convolutional, Turbo and LDPC codes, which have enabled the transmission at extremely high data rates over the erratic fading wireless channel. Hence, naturally these have been included in the 4G wireless standards of LTE and WiMAX. Further, advances in Information Theory have led to a fundamental understanding of data rates over current and futuristic wireless communication systems including fading wireless channels, multiple-input multiple-output (MIMO) systems, orthogonal frequency division multiplexing (OFDM) networks and many others. Thus, modern information and coding theory forms the bedrock of broadband wireless communications and is necessary for a comprehensive understanding of the theory of contemporary high speed wireless access. This course aims to provide the students with a rigorous in-depth exposure to information and coding theory from the perspective of modern 3G/4G wireless communications.