

**INDIAN INSTITUTE OF INFORMATION TECHNOLOGY
DESIGN AND MANUFACTURING (IIITD&M) KANCHEEPURAM**

INTRODUCTION OF NEW COURSE

Course Title	COMMUNICATION SYSTEMS	Course No <i>(will be assigned)</i>				
Specialization	Electronics Engineering	Structure (LTTC)	3	0	0	3
Offered for	UG	Status	Core <input type="checkbox"/>		Elective <input checked="" type="checkbox"/>	
Faculty	Dr. Binsu J Kailath	Type	New <input checked="" type="checkbox"/>		Modification <input type="checkbox"/>	
Pre-requisite		To take effect from	Jan 2011			
Submission date	November 2010	Date of approval by AAC				
Objectives	This course introduces the students to signals including random signal and noise in electrical communication systems, spectral analysis and fundamentals of information theory. This helps the students to apply Fourier concepts to transmission propagation, power spectral density and analog & digital signal modulation characteristics. They should be able to develop and compare the functional blocks of amplitude and angle modulation and demodulation for both analog and digital sub-systems and compare system performance in the presence of noise.					
Contents of the course <i>(With approximate break up of hours)</i>	<p>Communications: Random signals and noise: probability, random variables, probability density function, autocorrelation, power spectral density. Noise, AWGN, SNR, Fundamentals of information theory and channel capacity theorem, Link design, Satellite links, point to point link, wired links</p> <p>Analog communication systems: amplitude and angle modulation and demodulation systems, spectral analysis, super heterodyne receivers; elements of hardware, realizations of analog communication systems; signal-to-noise ratio calculations for analog communication systems. Capacity utilization of AM/FM</p> <p>Digital communication systems: Why digital communication? Pulse code modulation, differential pulse code modulation, matched filter receivers, multiple users, Interference SINR, bandwidth consideration and probability of error calculations for these schemes. TDMA, FDMA, CDMA and GSM; Capacity utilization of PCM</p>					
Text and References	<p>Text Books</p> <ol style="list-style-type: none"> 1. Simon Haykin, Michael Moher, An Introduction to Analog and Digital Communications, John Wiley, 2006, 2nd Edition. <p>Reference Books</p> <ol style="list-style-type: none"> 1. B. P. Lathi, Zhi Ding, Modern Digital and Analog Communication Systems, Oxford University Press, 2009, 4th Edition. 2. Simon Haykin, Communication Systems, John Wiley, 2009, 5th Edition. 3. Leon W. Couch, Digital & Analog Communication Systems, Prentice Hall, 2007, 7th Edition. 4. Rodger E. Ziemer, William H. Tranter, Principles of Communications, John Wiley, 2008, 6th Edition. 					