



IEEE Systems Council Chapter presents IEEE Distinguished  
Lecture Series on

**The Things We Ought to Know  
About Digital Communications (Part II)**

**Dr. Bernard Sklar**

Date: May 2, 2016 (Mon)  
Time: 11:30 – 12:00 Social/Lunch  
12:00 - 1:30pm Seminar  
Location: VEC 325, CSULB



**Abstract:** This is part II of a talk that reinforces basics of digital communications. We deal with waveform shapes, signaling types, degradation modes, and fading channels. We examine important metrics such as bandwidth-efficiency and time-bandwidth product. How do we define our communication needs? How do we determine if a candidate system is bandwidth limited, power limited, or both, and how does that knowledge shape our design choices for meeting, perhaps difficult, requirements? What did Nyquist teach us about pulse shaping? What did Shannon teach us about capacity and ultimate performance? We learn about error-correction coding, and examine subtle energy and rate transformations that appear in all digital systems. This intense talk is geared toward designers, managers, software developers, and whoever wants to partake in the passion that drives communication engineers.

**About Speaker:** Dr. Bernard Sklar has over 50 years of technical experience at the following companies: Republic Aviation, Hughes Aircraft, Litton Industries, and The Aerospace Corporation. At Aerospace, he helped develop the MILSTAR satellite system, and was the principal architect for EHF Satellite Data Link Standards. Currently, he is the Director of Advanced Systems at Communications Engineering Services, a consulting company he founded in 1984. He has taught engineering courses at several universities, including the University of California, Los Angeles and the University of Southern California. He is an External Examiner of Digital Communication Engineering at the University of Cape Town, South Africa, and has presented numerous training programs throughout the world. Dr. Sklar has published and presented over 90 technical papers. He received the 1984 Prize Paper Award from the IEEE Communications Society for his series on digital communications, and he is the author of the book, *Digital Communications: Fundamentals and Applications*, 2nd Edition, Prentice-Hall, 2001. His academic credentials include a B.S. degree in Math and Science from the University of Michigan, an M.S. degree in Electrical Engineering from the Polytechnic Institute of Brooklyn, New York, and a Ph.D. degree in engineering from the University of California, Los Angeles.

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