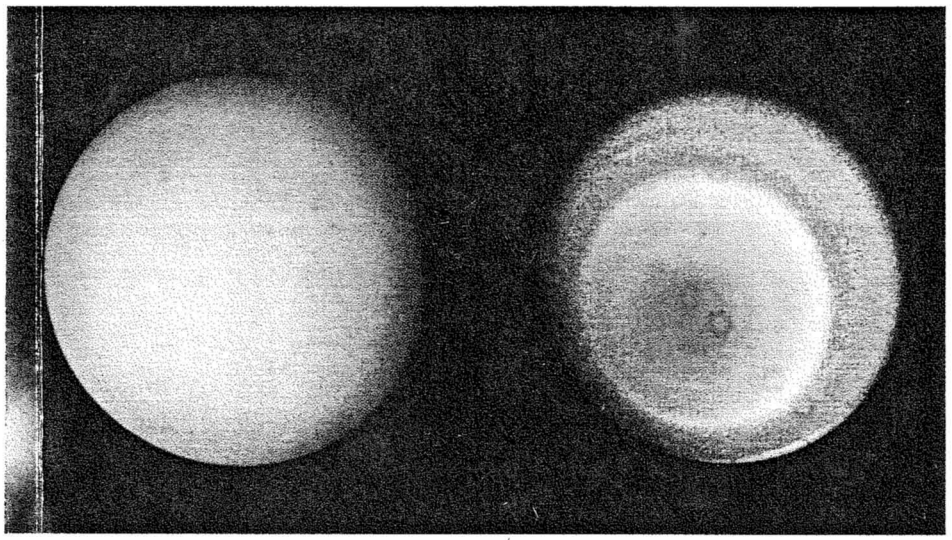
AMCEE Videotape Courses for engineers, scientists and technical managers.



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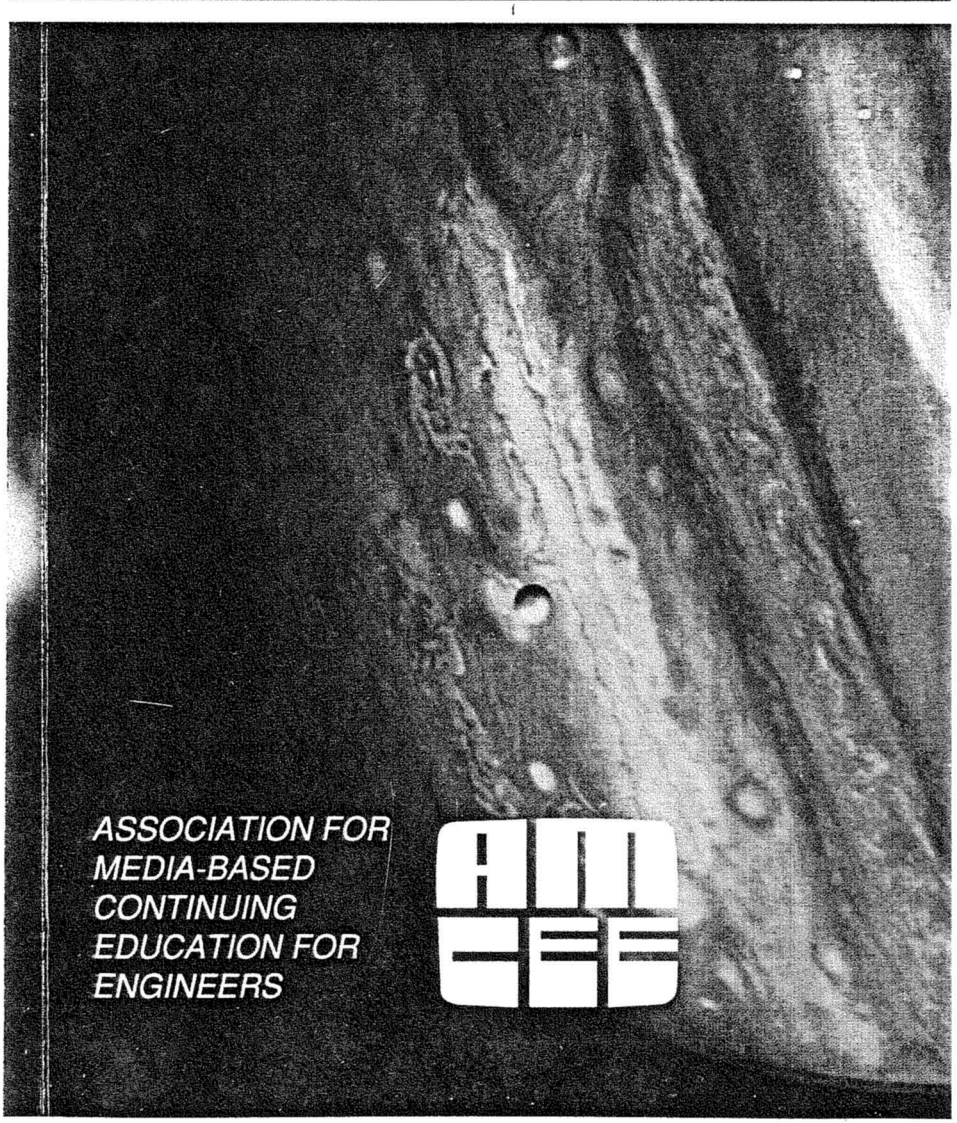

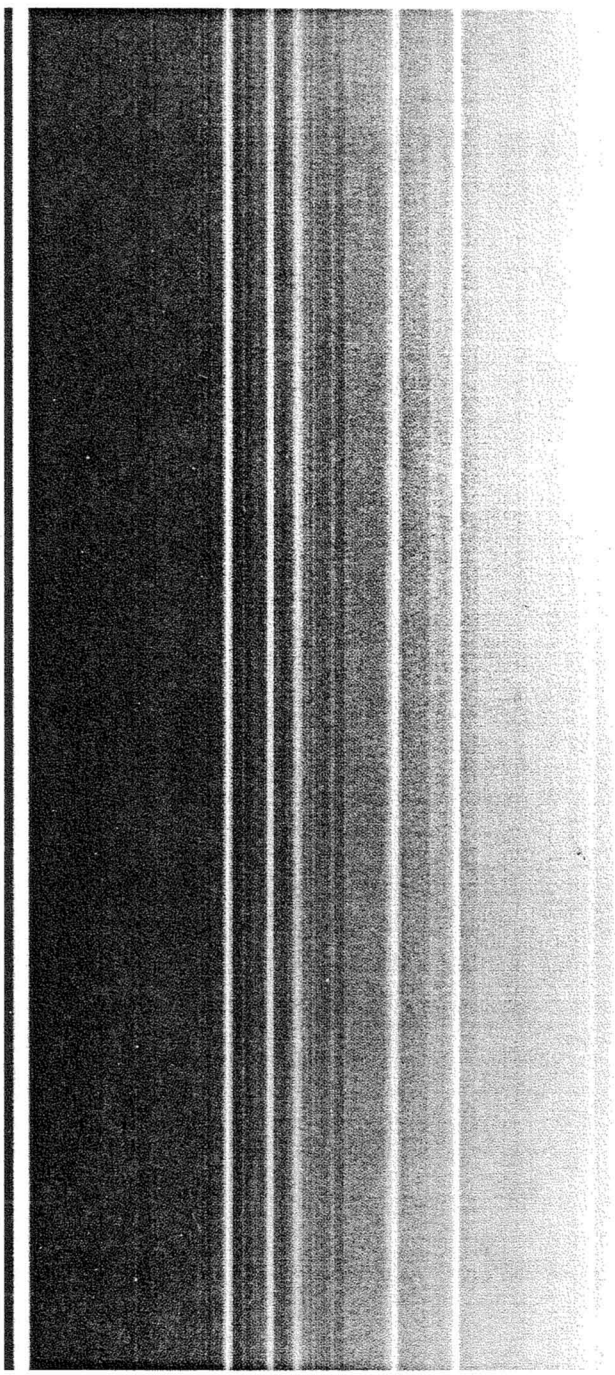

PROBABILITY AND STATISTICS FOR ENGINEERS

University of Massachusetts

25 Lectures (75 minutes each)
Textbook, Course Notes

GENERAL DISCUSSION:

A one semester survey of probability theory and statistical analysis. Probability models for discrete and continuous random phenomena are examined in detail. The theory is illustrated with applications from different fields of engineering. A background in basic engineering mathematics through multivariate calculus is recommended.

INSTRUCTOR:

Lawrence M. Seiford, Associate Professor of Industrial Engineering and Operation Research.

COURSE DESCRIPTION:

Topics include elements of probability - - basic rules of probability, permutations and combinations, conditional probability, and Bayes theorem. Statistical Analysis of Data- -Histograms and summary measures for discrete and continuous data. Continuous Distributions- -uniform, exponential, gamma, Rayleigh, Weibull, normal and beta. Discrete Distributions- - hypergeometric, binomial, Poisson, geometric and negative binomial. Statistics- -sampling from a population, functions of sample values, estimation, and hypothesis testing.

VIDEOCASSETTES:

	14 week rental	$5,400
	Purchase	$12,000

TEXTBOOK: Probability and Statistics for Engineering and the Sciences, J. Devore; Brooks/Cole, 2nd edition, 1987.

Please call prior to ordering to confirm availability and price.

COURSE NOTES: One set of notes is included.

PREVIEW PACKAGE: $150
Preview for three weeks. Includes first three lectures and a set of corresponding notes. Fee is applicable toward course rental or purchase.

SHANNON SAMPLING AND INTERPOLATION THEORY

University of Washington

19 Color Videocassettes
Textbook

This course is an in-depth study of the analytic theory whereby analog signals can be reconstructed from their samples. Effects of data noise and other error sources on this restoration is considered. A number of important generalizations of the Shannon sampling theorem are discussed including those of Lagrange and Papoulis. Extensions to bandpass and multidimensional signals are also studied. Interpolation is also considered in the case where signals are continuously sampled over a number of disjoint intervals.

Intended Audiences

Shannon sampling theory is an integral component in such disciplines as image and digital processing, communications, information theory, optics and holography.

Instructor

Dr. Robert J. Marks II, Professor, Electrical Engineering, University of Washington.

Course Contents

1. INTRODUCTION; 2. FUNDAMENTALS OF FOURIER ANALYSIS AND STOCHASTIC PROCESSES: Signal Classes; The Fourier Transform; Stochastic Processes; **3. THE CARDINAL SERIES:** Interpretation; Proofs; Properties; Application to Spectra Containing Distributions; Application to Bandlimited Stochastic Processes; **4. GENERALIZATIONS OF THE SAMPLING THEOREM:** Generalized Interpolation Functions; Papoulis' Generalization; Derivative Interpolation; Sampling Theory for Trigonometric Polynomials; Sampling Theory for Bandpass Functions; A Summary of Sampling Theorems for Directly Sampled Signals; Lagrangian Interpolation; Kramer's Generalization; **5. SOURCES OF ERROR:** Effects of Additive Data Noise; Jitter; Truncation Error; **6. THE SAMPLING THEOREM IN HIGHER DIMENSIONS:** Fourier Analysis; The Multidimensional Sampling Theorem; Restoring Lost Samples; Periodic Sample Decimation and Restoration; Raster Sampling; **7. CONTINUOUS SAMPLING:** Interpolation From Periodic Continuous Samples; Prolate Spheroidal Wave Functions; The Papoulis-Gerchberg Algorithm; Remarks.

Videocassettes

	12-Week Rental	$1900
	Purchase	$3800

Textbook $75
Shannon Sampling and Interpolation Theory; R. J. Marks, Springer Verlog, 1989.

Preview Packet $25