

**CONTACT INFORMATION**

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**EDUCATION:**

B.S.E.E.	South Dakota School of Mines and Technology	1963
M.S.E.E.	South Dakota School of Mines and Technology	1964
Ph.D.	Arizona State University	1968

**PRESENT POSITION:**

Professor Emeritus - New Mexico State University

**ACADEMIC EXPERIENCE:**

**University of Maribor**, Department of Electrical Engineering and Computer Science, Visiting Professor, April 1, 2008-June 11, 2008. (Maribor, Slovenia)

**University of West Bohemia** (Zapadoceska Univerzita VPlzni), Katedra Kybernetiky, Visiting Lecturer, March 15, 2007-May 11, 2007. (Plzen, Czech Republic)

**Nanjing University of Science & Technology**, Computer Science Department, Visiting Professor, Sept. 10, 2005-Nov 26, 2005. (Nanjing, Republic of China)

**Chiang Mai University**, Electrical Engineering Department, Visiting Professor, Oct 14, 2003 - March 8, 2004. (Chiang Mai, Thailand).

**New Mexico State University**, Instructor, Dept. of Sociology and Anthropology, Spr2003.

**Indian Institute of Science**, Electrical Engineering Department, Visiting Professor, Dec 31, 2000 - May 1, 2001. (Bangalore, India)

**South Dakota School of Mines and Technology**, Department of Electrical and Computer Engineering, Associate Professor, August 16, 1998-May 17, 1999.

**Kwangju Institute of Science & Technology**, Kwangju, Republic of Korea, Department of Information and Communications, Professor, March 1996-July 1996, March 1997-June 1997.

**Aristotle University of Thessaloniki**, Greece, Department of Electrical Engineering, Fulbright Scholar, Lecturing and Research, Sept. 12, 1993-Dec. 15, 1993.

**New Mexico State University**, Department of Electrical and Computer Engineering, Professor Emeritus, College Professor 1994-present, Professor, 1980-1994. Associate Professor, 1972-1980, Assistant Professor, 1968-1972. Sabbaticals: July 1975-July 1976; Aug. 1984-Jan. 1985.

My main responsibilities included teaching graduate and undergraduate level courses, conducting research, and directing doctoral dissertations in the statistical signal processing area with special emphasis on: digital signal processing, biomedical signal processing, image processing and pattern recognition, random processes: filtering and estimation, Kalman filtering, information theory, and coding theory.

I have taught special graduate and undergraduate courses off campus at White Sands Missile Range, Holloman AFB, New Mexico and NUWES at Keyport, Washington on statistical communication theory, digital signal processing, Kalman Filtering, adaptive filters, and least squares analysis.

Also I was involved in teaching graduate level courses on TV (live and remote) for students at Kirtland AFB, Holloman AFB, White Sands Missile Range (WSMR) and RCA, Juarez, Mexico.

**Clemson University**, Department of Electrical and Computer Engineering, Visiting Professor, January 1985-June 1985. Taught undergraduate courses in signals and systems and a graduate course in Digital Signal Processing.

**Centre d'Etude des Phenomenes Aleatoires et Geophysiques (CEPHAG)** Institut National Polytechnique de Grenoble, France, August-January 1985, June-August 1985. Research on Digital Signal Processing Applications. Completing text on digital signal processing.

**Duke University**, Department of Biomedical Engineering, Post-doctoral Fellowship on a NIH Training Grant, August 1975-July 1976. Worked in a research group on the inverse electrocardiogram problem. Served as volunteer preceptor on Biomedical Courses in Statistics. Grant Summer 1990. NSF Grant Summer 1991.

**Arizona State University**, Department of Electrical Engineering, Instructor 1967-68. Faculty Associate, 1964-1967. Taught undergraduate courses in circuits, control systems, logic design and senior-graduate level courses in communication theory, circuits and information theory.

## PROFESSIONAL EXPERIENCE:

**Naval Undersea Warfare Engineering Station**, Keyport, Washington Summers 1990, '88, '87, and '86, Grant, taught special courses on Adaptive Filters, Multirate Filters, and Digital Signal Processing and worked on comparative underwater target analysis and adaptive cancellation of crosstalk in active submarine targets.

**Rome Air Development Center**, Griffis AFB, New York, Summer 1984, Fellow in the USAF-SCEEE Summer Faculty Research Program. Suboptimum Extrapolators for Spectral Estimation.

**OA0 Corporation**, White Sands Missile Range, New Mexico, Summer 1982, Consultant. Developed a Scan on Scan Stochastic Model and Simulation for vulnerability assessment.

**Naval Undersea Warfare Engineering Station**, Keyport, Washington, Summer 1981, Electrical Engineer, taught special course on Digital Signal Processing and worked on NUWES test range digital communication system.

**Rome Air Development Center**, Griffis AFB, New York, Summer 1980, Fellow in the USAF-SCEEE Summer Faculty Research Program. Optimum Sampling for spectral Estimation Applications.

**U.S. Army Atmospheric Sciences Laboratory**, White Sands Missile Range, New Mexico, Summers 1979, 1978, Consultant under the Scientific Services Program. Development of a procedure for extraction of accurate timing information for the sound ranging problem including software development.

**Missile Electronic Warfare Technical Area**, White Sands Missile Range, New Mexico, Summer 1971, advisor under U. S. Army Research Office-Durham. December 1971-January 1975 Research Grants under U.S. Army Research Office-Durham. Provided a statistical approach to accomplish a comparative analysis of system effectiveness in various ECM environments.

**NASA/ASEE Manned Spacecraft Center**, Houston, Texas, Summer 1970, Engineering Systems Design Institute Fellow. As a member of an interdisciplinary team, we applied the systems engineering approach to the design of a lunar mobility aid for the post 1980 period.

**Harry Diamond Laboratories**, Washington, D.C., Summer 1969, Consultant under U.S. Army Research Office-Durham. Recommended and investigated procedures for collecting useful phase information from radar terrain data.

## RESEARCH INTERESTS:

My main research interest is the application of **Digital Signal Processing** techniques, including **pattern recognition and neural nets**, to biomedical, archaeological, and speech problems. Also of special interest is the measurement, modeling, **filtering and estimation of random processes**.

Specific current research topics are clustering of archaeological data, nonlinear system identification of speech parameters, acoustical measurements for identification of southwestern kivas, **ground penetrating radar for archaeology**, detection and estimation of ventricular fibrillation parameters, and digital signal and image processing.

**PUBLICATIONS (TEXTBOOKS):**

***Random Processes: Filtering, Estimation, and Detection***, John Wiley & Sons, 2003. Will go into the 2<sup>nd</sup> printing. Chinese translation, Publishing House of Electronics Industry, Beijing, ROC and John Wiley & Sons, 2005.

***Fundamentals of Digital Signal Processing***, Harper & Row, 1986; John Wiley & Sons, 1987; Wiley International Edition, 1988. Now in the sixth printing.

My text, *Fundamentals of Digital Signal Processing* was selected by "Choice Magazine" as one of the outstanding academic books published in 1986. Only 14 were selected across the entire field of engineering to receive this honor. (May Issue, 1987 Choice Magazine).

***Solutions Manual*** to accompany *Fundamentals of Digital Signal Processing*, Harper & Row, 1986.

***Pattern Recognition: Statistical and Neural*** ( In Progress)

**TV INSTRUCTION:**

Taught two courses by Video Conferencing for South Dakota School of Mines & Technology (1999)  
 Taught course on Pattern Recognition on TV for the National Technological University (NTU)  
 Panel Member "TV Teaching Seminar", New Mexico State University, January 9, 1989.  
 Panel Member "TV Teaching-How its Different", New Mexico State University, November 10, 1989.  
 Wrote a policy letter for TV Instruction.  
 Taught TV courses live, remote, delayed, and reused at NMSU.  
 Invited TV Lecture "Information Fusion for Electronic Vision Systems" with G. M. Flachs for Emerging Cardiovascular Technologies Seminar Series, NSF/ERC, Duke University, January 31, 1990.

**RECENT COMMITTEE INVOLVEMENT**

**Publications CD**, 13<sup>th</sup> Mogollon Archaeology Conference, 10/04.  
**Chaired Sessions**, International Conference on Intelligent Technologies, InTech2003, Thailand.  
**Publications Chairman**, 1999 Midwest Symposium on Circuits and Systems (8/98-12/99)  
**Publications Chairman**, 1990 International Conference on Acoustics, Speech and Signal Processing (Authors Kit, Advance Program, Conference Guide, and Conference Proceedings).  
 Chairman, Department Head Search Committee (8/21/87 - 8/21/89)  
 Member Electrical and Computer Engineering Department, Tenure and Promotion Committee (Spring '88 to 1993).

**REVIEWER FOR:**

International Conference on Intelligent Technologies, InTech2003, Chiang Mai Thailand.  
 "Applications of Fundamental Concepts of Mathematics", an Individual Learning Package for IEEE.  
 John Wiley & Sons, Inc.

**MEMBER OF:**

SAA, Eta Kappa Nu, Tau Beta Pi, Sigma Xi.

**HONORS AND AWARDS:**

Fulbright Scholar(Greece, Fall 1993)  
 Choice Magazine "Outstanding academic book award 1987"  
 General Electric Award, Arizona State University  
 SDSM&T Endowment Association Scholarship  
 Schouweiler, Sayler and Thorstenson Scholarship (SDSM&T)  
 Homer Surbeck Scholarship (winner of West River Mathematics Contest).

**PUBLICATIONS (OTHER):**

- "Efficient Liver Segmentation Based on the Spine" with Kyung-Sik Seo, Seung-Jin Park, and Jong-AnPark, ADVIS 2004, Third Biennial International Conference on Advances in Information Systems, Oct 20-22, 2004, Izmir, Turkey.
- "Summary of the NMSU 2004 Field Season at Joyce Well", with William Walker, Mark Sechrist, et al, 13<sup>th</sup> Mogollon Archaeology Conference, Sept 30-Oct 2, 2004.
- "Software with Graphical User Interface(GUI) for Processing of Archaeological Ground Penetrating Radar (GPR)", with Kyung-Sik Seo, Society for American Archaeology 65<sup>th</sup> Annual Meeting, Philadelphia, April 5-9, 2000.
- "How Ritual Affects Stratigraphy: A Mathematical Approach", with William H. Walker, Society for American Archaeology 65<sup>th</sup> Annual Meeting, Philadelphia, April 5-9, 2000.
- "LCLNET: A Feedforward Neural Net Trainer", International Conference on Signal Processing Applications & Technology, Oct. 7-10, 1996.
- "Use of Blood Pulse Signature for Identity Verification", with Mario I. Chacon M., International Conference on Signal Processing Applications & Technology, Oct. 7-10, 1996, Boston, MA.
- "Blind Identification of Instantaneous Nonlinear Polynomial Systems", 1995 IEEE Workshop on Nonlinear Signal and Image Processing, June 20-22, 1995, Halkidiki, Greece.
- "Discrimination of Cardiac Arrhythmia Using a Fuzzy Rule-Based Method", with Erik Chowdhury, Computers in Cardiology, Bethesda, Maryland, September 24-28, 1994.
- "Shift and Rotation Invariant Texture Recognition with Neural Nets", with Miguel A. Mayorga, IEEE World Congress on Computational Intelligence, June 26 - July 2, 1994).
- "Signal Processing Using the Generalized Taylor Series Expansion", with Rouzbeh Tehrani, Twenty-Seventh Annual Asilomar Conference on Signals, Systems and Computers, Nov. 1-3, 1993.
- "Blind Nonlinear System Identification During Ventricular Fibrillation", Twelfth Southern Biomedical Engineering Conference, New Orleans, La., April 2-4, 1993.
- "Small Sample Maximum Likelihood Estimation of the Dose-Response Success Curve", Computers in Cardiology, October 11-15, 1992.
- "Use of Generalized Taylor Series Expansion", with Rouzbeh Tehrani, 1992 IEEE International Symposium on Circuits and Systems, May 10-13, 1992.
- "Detection and Estimation of Chirp Signals Using State Space Representation", with Ahmed Nashat, 1992 IEEE International Symposium on Circuits and Systems, May 10-13, 1992.
- "Detection Of Ventricular Fibrillation from Multiple Sensors", with Stephanie A. Lindsley, SPIE's International Exhibition on Optical Engineering and Photonics, April 20-24, 1992.
- "Tailored Orthonormal Sets for Expansion of Specific Classes of Functions", Proceedings of the 1992 International Conference on Acoustics, Speech and Signal Processing", March 23-26, 1992, pp. V37-40.
- "Neural Nets for Determination of Texture and its Orientation", with Miguel Mayorga, Proceedings of the 1991 International Conference on Acoustics, Speech and Signal Processing, May 14-17, 1991.
- "Nonlinear Formulas for Interpolation, Extrapolation, and Estimation of Single and Multiple Sinusoids in Noise", 1990 International Conference on Acoustics, Speech and Signal Processing, April 2-5, 1990.
- "Cross-talk and Self-echo Cancellation by Adaptive Filters for Pseudo-passive Artificial Targets", December 1989, Applied Research Technical Note 90- , NUWES, Keyport, Washington.
- "Manual for MUSTIG Software", September 1989, Rewriting of a French Translation of a Manual to accompany a Software Package for system modeling for Dr. Gerard Lejeune, CEPHAG, France.

"Nonlinear Frequency and Magnitude Estimators for Single and Multiple Sinusoids in Noise", August 1987, Applied Research Technical Note 87-9, Naval Undersea Warfare Engineering Station, Keyport, Washington.

"System Description of an Adaptive Self-echo and Crosstalk Canceler for a Towed Array Artificial Target," July 1987, Applied Research Technical Note 87-5, Naval Undersea Warfare Engineering Station.

"Improved Spectral Estimation Based on Extrapolated and Smoothed Data Records," with Miguel Mayorga, Proceedings of the 1987 International Conference on Acoustics, Speech, and Signal Processing (April 6-9, 1987).

"Suboptimum Extrapolation for Spectral Estimation" USAF-SCEEE SFRP Final Report, August 15, 1984.

"Image Segmentation using Maximum Entropy", with Jay Jordan, Proceedings of the 1984 International Conference on Acoustics, Speech, and Signal Processing, March 19-21, 1984, pp. 32.4.1-32.4.4.

"Digital Signal Processing Tutorial," Proceedings of the Jordan-International Electrical and Electronic Engineering Conference (JIEEEEC), pp. 267-273, April 25-28, 1983.

"Optimum Sampling Times for Spectral Estimation by Generalized Regression," Final Report Grant No. AFOSR-81-0140, April 30, 1982.

"Optimum Sampling Times for Estimation of Fourier Coefficients in Noise," 1981 International Conference on Acoustics, Speech, and Signal Processing, Conference Proceedings, March 30 & 31, April 1, 1981.

"Optimum Sampling times for Spectral Estimation," USAF-SCEE SFRP Final Report, September 1980.

"Multisignal Time Difference Estimator with Application to the Sound Ranging Problem," 1980 International Conference on Acoustics, Speech, and Signal Processing, Conference Proceedings, April 9, 10, 11, 1980.

"A Software Package for Estimating Time Differences for Artillery Sound Ranging Applications," Atmospheric Science Laboratory Report No. CR-79-0100-6, White Sands Missile Range (WSMR), New Mexico, November 1979.

"Bias and Variance of a Sound Ranging Estimator," proceedings of the Time Delay Estimation and Applications Conference, May 1, 1979.

"A Procedure for Obtaining More Accurate Timing Information for the Sound Ranging Problem, Atmospheric Sciences Laboratory Report No. ASL-CR-79-0100-1, February 1979.

"Estimation in the Presence of Random Probe Placement," Proceedings of the First International Conference on Mathematical Modeling, August 29, 1977, pp. 609-618.

"Nonlinear Systems Analysis Using Walsh Functions," Final Report National Science Foundation Grant No. GK-40672, March 30, 1976, 30p. (with Mohammad Maqusi, John Werth and Shun-Hon Chung).

"Use of Wave Period in Signal Detection," U.S. Government Accession No. ADA 015 711, July 1, 1975, 26p. (with Sun Hon Chung)

"Recursive and Moving Cubic Spline Interpolation Methods," U.S. Government Accession No. ADA 014 949, March 1, 1975, 10p.

"Error in Energy Spectrum Estimation Due to Quantization," U.S. Government Accession No. ADA 014 948, February 1975, 10p.

"Approximation Error in Estimation of Continuous Unknown Deterministic Signals in Noise from Discrete Samples," Proceedings of the IEEE Conference on Decision and Control, November 20, 1974.

"Analysis and Measurement of Pulse Width Densities," with Shun-Hon Chung, New Mexico State University Engineering Experiment Station Technical Report No. 85-74, February 1974.

"A Comparison of Approximation Techniques Used in Estimating a Deterministic continuous Waveform from Discrete Noisy Samples," United States Army Electronics Command Report No. ECOM 5616, October 1973.

"The Amplitude Densities of Single-Tone Amplitude-Modulated (AM) Waveforms," IEEE Transactions on Communications, COM-21, 860-862, July 1973.

"Waveform Analysis System Final Amplitude Analysis," with C. Klassen and E. Bergsagel, United States Army Electronics Command Report No. ECOM-5479-2, June 1973.

"An Adaptive Graduate Educational Techniques," IEEE Transactions on Education, Volume E-16, No. 1, 64, February 1973.

"Suboptimum Versus Matched Filters," with Bretault, Pierre M., Proceedings of the 1972 Canadian Communications and EHV Conference, November 9-10, 1972.

"Output Dyadic Correlation Functions of Instantaneous Nonlinear Devices," with Maqusi, Mohammad, Proceedings of the National Electronics Conference, October 9-11, 1972.

"Optimum Sample Rates for Data Estimation," Proceedings of the Tenth Annual Allerton Conference on Circuit and System Theory (1972), October 4-6, 1972.

"Chaff Simulation Analysis and Preliminary Design of Chaff Simulator," (U), with Rodriquez, R., and Larow, J.F., United States Army Electronics Command Report No. ECOM-5464[SECRET], August 1972.

"Optimum Sample Rates for Data Estimation," MEWTA/EWL Tech. Memo No. 13-01, August 1, 1972.

"A Hybrid Chaff Simulator" MEWTA/EWL Tech. Memo No. 12-17, June 15, 1972.

"The Amplitude Density of a Truncated Fourier Series," IEEE Transactions on Communications, COM-20, 483-486, June 1972.

"A Relationship Between the Fourier Series Coefficients and the Amplitude Density Function of a Periodic Signal," Proceedings of the 1972 Midwest Circuit Symposium, May 5, 1972.

"Amplitude Density of Distortion of an Amplitude Modulated Waveform by a Dispersive Delay Line," Missile Electronic Warfare Technical Area (MEWTA/EWL) Technical Memorandum No. 12-07, December 1, 1971.

"Statistical Analysis of ECM/ECCM Signals and Techniques," United States Army Electronics Command Report No. ECOM-5418, November 1971.

**RESEARCH GRANTS:**

"The Duke-North Carolina National Science Foundation/Engineering Research Center for Emerging Cardiovascular Technologies/NMSU Fellowship Program", (subcontract with Duke NSF/ERC), October 15, 1990 - October 15, 1992.

"Application of Realtime Signal Processing to Emerging Cardiovascular Technologies," Duke-North Carolina NSF/ERC, October 15, 1990 - October 14, 1992. Co P.I.

"Underwater Signal Processing," Naval Undersea Warfare Engineering Station (NUWES), May 15, 1990 - December 1, 1990. P.I.

"Experimental Establishment/Accurate Defibrillation Dose Response Success Curve," Duke University, July 13, 1990 - August 9, 1990. P.I.

"Target Signal Processing", Naval Undersea Warfare Engineering Station (NUWES), May 2, 1988 - September 1988. P.I.

"Adaptive Crosstalk Nullification", Naval Undersea Warfare Engineering Station (NUWES), May 15, 1987 - August 7, 1987. P.I.

"Comparative Assessment of Target Signal Processors," Naval Undersea Warfare Engineering Station, May 14, 1986 - August 25, 1986. P.I.

"Suboptimum Extrapolators for Spectral Estimation", Southeastern Center for Electrical Engineering Education (SCEEE), January 1, 1985 - November 30, 1985. P.I.

"Optimum Sampling Times for Spectral Estimation," USAF Air Force Office of Scientific Research, March 1, 1981-February 28, 1982. P.I.

"RATSCAT RCS Data Acquisition Study," Physical Science Lab, New Mexico State University, June 10, 1977 - October 1, 1977. C.P.I.

"Postdoctoral Fellowship," National Institutes of Health, August 15, 1975 - June 30, 1976.

"Statistical Analysis of a Waveform Analysis System," U.S. Army Research Office -Durham, January 14, 1974 - January 13, 1975. P.I.

"Nonlinear Systems Analysis Using Walsh Functions, National Science Foundation, October 15, 1973 - March 31, 1975. P.I.

"Statistical Analysis of a Waveform Analysis System," U.S. Army Research Office - Durham, January 14, 1973 - January 13, 1974. P.I.

"Theoretical Analysis of Statistical Properties of ECM Signals," U.S. Army Research Office - Durham, December 1, 1971 - November 30, 1972. P.I.

**RECENT COURSES TAUGHT** (Last 15 years)

- Spring 2008 PR "Pattern Recognition: Statistical and Neural", Lonnie C. Ludeman, Prepublication Manuscript. (UMB, Maribor, Slovenia)
- Spring 2007 PR "Pattern Recognition: Statistical and Neural", Lonnie C. Ludeman, Prepublication Manuscript. (UWB, Plzen, Czech Republic)
- Fall 2005 EE-495 "Pattern Recognition: Statistical and Neural", Lonnie C. Ludeman, Prepublication Manuscript. (NUST, Nanjing, Republic of China)
- Fall 2003-4 EE-495 "Pattern Recognition: Statistical and Neural", Lonnie C. Ludeman, Prepublication Manuscript. (CMU, Chiang Mai, Thailand)
- Spring 2003 ANTH 598 My notes and portions of: "Exploratory Multivariate Analysis in Archaeology", M.J. Baxter, Edinburgh UP, 1994.  
"Mathematics in Archaeology", Clive Orton, Cambridge University Press, 1982.  
"Quantifying Archaeology", Stephen Shennan, University of Iowa Press, 1997.
- Spring 2001 E1-254 "Pattern Recognition: Statistical and Neural", Lonnie C. Ludeman, Prepublication Manuscript. (IISc, Bangalore, India)
- Fall 2000 EE671 "Random Processes: Filtering, Estimation, and Detection", Lonnie C. Ludeman 1999 Prepublication Draft.(NMSU)
- Fall 1999 EE571 "Random Processes: Filtering and Estimation", Lonnie C. Ludeman 1999 Prepublication Draft.(NMSU)
- Spring 1999 EE671 "Statistical Signal Processing with Applications", M.D. Srinath, P.K. Rajasekaran, and R. Viswanathan, Prentice Hall, Inc, 1996. (NMSU)
- EE420 "Fundamentals of Digital Signal Processing", John Wiley & Sons, 1987.  
(SDSM&T by Video Teleconference)
- EE723 "Random Processes: Filtering and Estimation", Lonnie C. Ludeman, 1998,  
(SDSM&T by Video Teleconference)
- Fall 1998 EE650 "Pattern Recognition: Statistical and Neural", Lonnie C. Ludeman, 1997.  
At SDSM&T
- CENG244 "Digital Design, 2<sup>nd</sup> Edition, M. Morris Mano, Prentice Hall, 1991. At SDSM&T
- Spring 1998 EE565 "Pattern Recognition: Statistical and Neural", Lonnie C. Ludeman, 1997.
- Fall 1997 EE565F "Pattern Recognition: Statistical and Neural", Lonnie C. Ludeman, 1995.  
NMSU(KAFB).
- Spring 1997 DIC1683 "Pattern Recognition: Statistical and Neural", Lonnie C. Ludeman, 1995.( KJIST).  
DIC1681 "Random Processes: Filtering and Estimation", Lonnie C. Ludeman, 1992.  
At KJIST.
- Fall 1996 EE595 Fundamentals of Speech Recognition, Lawrence Rabiner and Biing-Hwang Juang, Prentice Hall, 1993.
- Short Course "Neural Networks for Pattern Recognition", Lonnie C. Ludeman, XVIII Congreso Internacional Academico de Ingenieria Electronica, Oct. 24-25, 1996.(Invited) Chihuahua, Mexico.
- Spring 1996 DIC1610 "Pattern Recognition: Statistical and Neural", Lonnie C. Ludeman, 1995.( KJIST)
- Fall 1995 EE565 "Pattern Recognition: Statistical and Neural", Lonnie C. Ludeman, 1995.
- Spring 1995 EE690 Selected topics in advanced Communications. Current publications from the literature on adaptive signal processing, adaptive arrays, neural nets, wavelets, fuzzy systems, higher order statistics.

CC520-NS Pattern Recognition by Live Video on NTU.

- EE 3495 Introduction to Artificial Neural Systems, Jacek M. Zurada, West Publishing Co., 1992.(At the University of Texas at El Paso, Electrical and Computer Engineering Department)
- Fall 1994 EE565 "Notes on Pattern Recognition"
- Spring 1994 EE572 "Random Processes: Filtering and Estimation", Lonnie C. Ludeman, Prepublication Draft.  
EE565F Notes on Pattern Recognition. By videocassetes to Kirtland AFB and Holloman AFB.
- Fall 1993 **Fulbright Scholar.** Undergraduate/Graduate Seminar at the University of Thessaloniki, Greece. Series of Scholar lectures on artificial neural networks for pattern recognition, Nonlinear Systems and Stochastic Processes, Estimation of the dose-response, characterization for ventricular defibrillation, nonlinear system identification during ventricular fibrillation.
- Sum II 1993 EE545F Fundamental of Digital Signal Processing, Lonnie C. Ludeman, John Wiley and Sons, 1987. Course by Videocassetes to Kirtland AFB and Holloman AFB, New Mexico.
- Sum I 1993 EE554 Introduction to Artificial Neural Systems, Jacek M. Zurada, West Publishing Co., 1992.
- May, 1993 Short Course: Neural Networks for Pattern Recognition. Current papers, notes, and software.  
Spring 1993 EE595 Processing of Biomedical Signals. Current papers from the literature, old classics, and notes.  
EE572 "Random Processes: Filtering and Estimation", Lonnie C. Ludeman, Prepublication Draft.
- Fall 1992 EE565 Pattern Recognition:Statistical, Structural and Neural Approaches, Robert Schalkoff, John Wiley & Sons, Inc.,1992.  
(EE565F) Same course by videocassetes to Kirtland AFB, NM (CC720-NS) Same course by satellite through NTU network  
EE594 Adaptive Signal Processing, Bernard Widrow and Samuel D. Stearns, Prentice Hall,Inc., 1985.
- Summer 1992 EE572F "Random Processes: Filtering and Estimation", Lonnie C. Ludeman, to be published By Videocassetes to Kirtland AFB, NM.
- Spring 1992 EE572 "Random Processes: Filtering and Estimation", Lonnie C. Ludeman, to be published
- Fall 1991 EE565 Statistical Pattern Recognition, 2nd Edition, Keinosuke Fukunaga, Academic Press, 1990.
- Spring 1991 EE572 "Random Processes: Filtering and Estimation", Lonnie C. Ludeman, Prepublication Draft.  
EE545F Fundamentals of Digital Signal Processing, Lonnie C. Ludeman, John Wiley Publishers, 1987. By videocassetes to Kirtland AFB, New Mexico and Thomson-RCA, Juarez, Mexico.
- EE400 Undergraduate Research orientation. Notes on cardiovascular signal processing and background digital signal processing.
- Fall 1990 EE594 Adaptive Signal Processing, Bernard Widrow and Samuel D. Stearns, Prentice Hall,Inc., 1985.  
EE595 Processing of Biomedical Signals. Current literature papers and old classics.