

Curriculum Vitae
for
CHARLES F. BUNTING, Ph.D.

Oklahoma State University
School of Electrical and Computer Engineering
202 Engineering South
405-744-1584

EDUCATION:

- **Ph.D. Electrical Engineering**, August, 1994, Virginia Polytechnic Institute and State University (Virginia Tech), Blacksburg, VA.
Dissertation Title: Functionals in Electromagnetics-An Investigation into Methods to Eliminate Spurious Solutions in the Application of Finite Element Techniques.
- **M.S. Electrical Engineering**, May 1992, Virginia Tech, Blacksburg, VA
Thesis Title: Issues Related to Finite Element Techniques for Two-Dimensional Transmission Structures.
- **B.S. Electrical Engineering Technology**, May 1989, Old Dominion University, Norfolk, VA.
- **A.A.S. Electronics Technology**, May 1985,
Tidewater Community College, Virginia Beach, VA

ACADEMIC EXPERIENCE

- Oklahoma State University, Stillwater OK
Department of Electrical and Computer Engineering
Associate Professor: August 2001 – Present
- Old Dominion University, Norfolk, VA
Department of Engineering Technology (Electrical Engineering Technology Program)
Associate Professor: August 2000 – August 2001
Assistant Professor: August 1994 – August 2000

Research Interests:

- Electromagnetic characterization of reverberation chambers
- Communication systems and radio frequency (RF) design.
- Fundamental variational principles and computational electromagnetics
- Analysis of optical and microwave structures using numerical methods including finite element techniques.

Teaching interests:

- Undergraduate communications, electromagnetics, networks, and electronics
- Graduate, electromagnetics, numerical techniques for electromagnetics, communication systems, and radio design

RESEARCH AND INDUSTRIAL EXPERIENCE

- The Bradley Department of Electrical Engineering, Virginia Tech, Blacksburg ,VA

Bradley Fellow, August 1991-1994

- Developed robust functional to eliminate false solutions in full field formulations.
- Developed and programmed (FORTRAN) two dimensional random mesh generator for numerical computations.
- Formulated and programmed numerical code for quasi-static and full field electromagnetic analysis of two dimensional devices and structures.

Research Assistant, May 1990 - August 1991.

- Utilized vector network analyzer to obtain electromagnetic characterization of stripline structures and other microwave devices.
- Participated in development of test fixture for temperature and humidity measurements for microwave characterization of stripline structures.
- Investigated surface roughness effects on propagation in stripline structures.

Teaching Assistant, August 1989 - May 1990.

- Graded homework and tests and coordinated mailings for televised senior antenna theory course.
- Taught two laboratory sections for an undergraduate networks course.
- Graded homework, projects, and tests for undergraduate communication class.

- Naval Aviation Depot, Norfolk, VA, Oct. 1981-August 1989

Electronic Measurement Equipment Mechanic, September 1986 - August 1989.

- Performed calibration and component level repair of commercial test equipment such as microwave devices, oscilloscopes, and digital multimeters.

Electronics Mechanic, October 1985 - September 1986.

- Prepared manual to troubleshoot and repair tactical air navigation modules.
- Solved engineering problems related to frequency synthesizer module.

Electronics Mechanic Apprentice, October 1981-October 1985.

PUBLISHED PAPERS

- C.F. Bunting and S. Yu, "Statistical Shielding Effectiveness – an Examination of the Field Penetration in a Rectangular Box using ModalMOM", *Proceedings of the 2002 International Symposium on Electromagnetic Compatibility (EMC)* in Minneapolis/St. Paul Minn., August 2002. NOMINATED BEST PAPER.
- C.F. Bunting, "Shielding Effectiveness of a Two-Dimensional Reverberation Chamber using Finite Element Techniques", submitted to *IEEE Trans. Electromag. Compat.*, June 2002.
- C.F. Bunting, "Statistical Characterization and the Simulation of a Reverberation Chamber using Finite Element Techniques," *IEEE Trans. Electromag. Compat.*, vol. 44, no. 1, pp. 214-221, February 2002.
- C.F. Bunting, "Shielding Effectiveness of a Reverberation Chamber using Finite Element Techniques," *Proceedings of the 2001 International Symposium on Electromagnetic Compatibility (EMC)* in Montreal Canada, August 2001.
- C.F. Bunting, "Shielding Effectiveness, Statistical Characterization, and the Simulation of a Two-dimensional Reverberation Chamber using Finite Element Techniques," Proceeding of the 19th National Digital Avionics Systems Conference (DASC) in Philadelphia, PA., October 2000. BEST PAPER AWARD.
- D.T. Nguyen, C.F. Bunting, K.J. Moeller, H.B. Runesha, and J. Qin, "Subspace and Lanczos Sparse Eigen-Solvers for Finite Element Structural and Electromagnetic Applications," *Advances in Engineering Software*, vol. 31, pp. 599-606, 2000.
- D.T. Nguyen, C.F. Bunting, K.J. Moeller, H.B. Runesha, and J. Qin, "Subspace and Lanczos Sparse Eigen-Solvers for Finite Element Structural and Electromagnetic Applications," *Proceedings of the 5th National Symposium on Large-Scale Analysis, Design, and Intelligent Synthesis Environment*. Oct. 12-15, 1999.
- C.F. Bunting, "Two-Dimensional Finite Element Analysis of Reverberation Chambers – The inclusion of a source and additional aspects of analysis," *Proceedings of the 1999 International Symposium on Electromagnetic Compatibility (EMC)* in Seattle, WA, August 1999, pp. 219-224.
- C.F. Bunting, K. J. Moeller, C. J. Reddy, and S.A. Searce, "A Two-Dimensional Finite Element Analysis of Reverberation Chambers," *IEEE Transactions in Electromagnetic Compatibility*, vol. 41, no. 4, Nov. 1999, pp. 280-289.
- C. F. Bunting, and W.A. Davis, "A Functional for Dynamic Finite Element Solutions in Electromagnetics," *IEEE Transactions on Antennas and Propagation*, vol. 47, no. 1, Jan. 1999, pp. 149-156.

- C.F. Bunting, K. J. Moeller, C. J. Reddy, and S.A. Scarce, "Finite Element Analysis of Reverberation Chambers: A Two-Dimensional Study at Cutoff," *Proceedings of the 1998 International Symposium on Electromagnetic Compatibility (EMC)* in Denver, CO, August 1998, pp. 208-212.
- S.A. Scarce and C.F. Bunting, "A frequency domain investigation of mechanical mode stirring in a reverberation chamber," *Proceedings of the Antenna Measurement and Techniques Association (AMTA)* conference in Boston, MA., November 1997, pp. 272-277.
- C.F. Bunting and W.A. Davis, "A Variational Functional for the Finite Element Method," *Proceedings of the IEEE Antennas and Propagation Society/URSI International Symposium*, Baltimore MD, July 1996, pp. 162-165.
- Davis, W.A., C.F. Bunting, and S.E. Bucca, "Measurement and Analysis for Stripline Material Parameters Using Network Analyzers," *IEEE Trans. Instrum. Meas.*, vol. 41, pp. 286-290, April. 1992.
- Davis, W.A. and C.F. Bunting, "Variational Functionals in Electromagnetics: Basic Concepts," *AEU*, vol. 46, No.5, pp. 355-361, 1992.

PUBLISHED ABSTRACTS

- C.F. Bunting, "Shielding Effectiveness, Statistical Characterization, and the Simulation of a Two-dimensional Reverberation Chamber using Finite Element Techniques," IEEE-Antennas and Propagation Society International Symposium, URSI Radio Science Meeting, Salt Lake City, Utah, July 2000.
- C.F. Bunting, T.X. Nguyen, B. Han, Y. Hu, and D.T. Nguyen, "Complex sparse Lanczos eigen-solvers for Electro-magnetics Engineering Solutions," Proceedings of the 78th Annual Meeting of the Virginia Academy of Science, May 23-26, 2000, Radford University, Radford, Virginia. Appears in the *Virginia Journal of Science*, vol. 51, no. 2, Summer 2000.
- C.F. Bunting, "Two-dimensional Finite Element Analysis of Reverberation Chambers," Presented at the 1999 Mode-Stirred Chamber, Anechoic Chamber and OATS Users Meeting.
- C.F. Bunting and W.A. Davis, "A Modal Analysis Approach - An Exact Approach for the investigation of the Causes of Spurious Solutions," Presented at the IEEE Antennas and Propagation Society/URSI International Symposium, June 20, 1995.

Davis, W.A. and C.F. Bunting, "Functionals for Variational Principles in Electromagnetics," IEEE-APS International Symposium, URSI Radio Science Meeting, Chicago, IL, 1992.

Bunting, C.F. and W.A. Davis,, " Finite Element Techniques for the Analysis of Two-Dimensional Transmission Systems," IEEE-APS International Symposium, URSI Radio Science Meeting, Chicago, IL, 1992.

Davis, W.A., S.E. Bucca and C.F. Bunting , "Transmission Line Modeling for Material Characterization: Including Dielectric/Conductor Losses and Interfacial Effects," IEEE-APS Int. Symposium, URSI Radio Science Meeting, London, Ontario, Canada, June 1991.

Davis, W.A., C.F. Bunting, and S.E. Bucca, "Measurement and Analysis for Stripline Material Parameters Using Network Analyzers," 1991 IEEE Instrumentation and Measurement Technology Conference, Atlanta, GA, May 1991.

RESEARCH PAPERS PRESENTED AT PROFESSIONAL MEETINGS

C.F. Bunting, "Statistical shielding effectiveness – an examination of the field penetration in a rectangular box using Modal/MoM," to appear in *Proceedings of the 2001 International Symposium on Electromagnetic Compatibility (EMC)*, in Minneapolis, Mn, August 2002. **Nominated Best Paper.**

C.F. Bunting, "Shielding Effectiveness of a Reverberation Chamber using Finite Element Techniques," *Proceedings of the 2001 International Symposium on Electromagnetic Compatibility (EMC)* in Montreal Canada, August 2001.

C.F. Bunting, "Shielding Effectiveness of a Two-dimensional Reverberation Chamber using Finite Element Techniques," to appear in the *Proceedings of the 2001 International Symposium on Electromagnetic Compatibility (EMC)* in Montreal, Canada, August 2001.

C.F. Bunting, "Shielding Effectiveness, Statistical Characterization, and the Simulation of a Two-dimensional Reverberation Chamber using Finite Element Techniques," presented at the 19th National Digital Avionics Systems Conference (DASC) in Philadelphia, PA., October 2000. **Best paper in session.**

D.T. Nguyen, C.F. Bunting, K.J. Moeller, H.B. Runesha, and J. Qin, "Subspace and Lanczos Sparse Eigen-Solvers for Finite Element Structural and Electromagnetic Applications," *Proceedings of the 5th National Symposium on Large-Scale Analysis, Design, and Intelligent Synthesis Environment.*, Oct. 12-15, 1999.

- C.F. Bunting, "Two-Dimensional Finite Element Analysis of Reverberation Chambers – The Inclusion of a Source and Additional Aspects of Analysis," *Proceedings of the 1999 International Symposium on Electromagnetic Compatibility (EMC)* in Seattle, WA, August 1999, pp. 219-224.
- C.F. Bunting, "Two-dimensional Finite Element Analysis of Reverberation Chambers," Presented at the 1999 Mode-Stirred Chamber, Anechoic Chamber and OATS Users Meeting., August 1999.
- S.A. Scarce and C.F. Bunting, "Statistical results for the UHF Data from the NASA EME Flight Tests," Presented at the 17th National Digital Avionics Systems Conference in Seattle, WA., October 1998
- C. Bunting, K.J. Moeller, D.T. Nguyen, H.B. Runesha, and J. Qin, "Subspace and Lanczos Sparse Eigen-Solvers For Finite Element Electromagnetic Applications," Numerical Methods and Computational Mechanics Conference (August 24-27, 1998, The University of Miskolc, Miskolc, Hungary).
- C.F. Bunting, K. J. Moeller, C. J. Reddy, and S.A. Scarce, "Finite Element Analysis of Reverberation Chambers: A Two-Dimension Study at Cutoff," to be presented at the IEEE 1998 International Symposium on Electromagnetic Compatibility (EMC) in Denver, CO, August 1998.
- S.A. Scarce and C.F. Bunting, "A Frequency Domain Investigation of Mechanical Mode Stirring in a Reverberation Chamber," Antenna Measurement and Techniques Association (AMTA) conference in Boston, MA., November 1997.
- C.F. Bunting and W.A. Davis, "A Variational Functional for the Finite Element Method," *Proceedings of the IEEE Antennas and Propagation Society/URSI International Symposium*, Baltimore MD, July 1996.
- C.F. Bunting and W.A. Davis, "A Functional that Eliminates Spurious Solutions and the Finite Element Implementation," Presented at the IEEE Antennas and Propagation Society/URSI International Symposium, June 20, 1995.
- C.F. Bunting and W.A. Davis, "A Modal Analysis Approach - An Exact Approach for the investigation of the Causes of Spurious Solutions," Presented at the IEEE Antennas and Propagation Society/URSI International Symposium, June 20, 1995.
- Davis, W.A. and C.F. Bunting, "Functionals for Variational Principles in Electromagnetics," IEEE-APS International Symposium, URSI Radio Science Meeting, Chicago, IL, 1992.

Bunting, C.F. and W.A. Davis, "Finite Element Techniques for the Analysis of Two-Dimensional Transmission Systems," IEEE-APS International Symposium, URSI Radio Science Meeting, Chicago, IL, 1992.

Davis, W.A., S.E. Bucca and C.F. Bunting, "Transmission Line Modeling for Material Characterization: Including Dielectric/Conductor Losses and Interfacial Effects," IEEE-APS Int. Symposium, URSI Radio Science Meeting, London, Ontario, Canada, June 1991.

Davis, W.A., C.F. Bunting, and S.E. Bucca, "Measurement and Analysis for Stripline Material Parameters Using Network Analyzers," 1991 IEEE Instrumentation and Measurement Technology Conference, Atlanta, GA, May 1991.

TECHNICAL REPORTS

C.F. Bunting and D.T. Nguyen "Finite Element Analysis of Reverberation Chambers-Final Report," NASA Langley Research Center, NAG-1-1982 (ODURF-180800), November 2000.

C.F. Bunting and D.T. Nguyen "Finite Element Analysis of Reverberation Chambers-Year 1 Report," NASA Langley Research Center, NAG-1-1982 (ODURF-180800), November 1998.

C.F. Bunting, "GSRP – The Characterization and Extension of a Mode-Stirred Chamber," NASA Langley Research Center, NGT-1-52130 (ODURF-162471), October 1998.

C.F. Bunting, "Microwave Technology Program," NASA Langley Research Center, Master Contract Agreement NAS1-19858, Task Authorization No. 6, October, 1997

C.F. Bunting, J.R. Hackworth, and R.L. Jones, "A Wireless Interactive System," Technology Application Center (TAC) / Consulting Associates Inc. (CAI), April 1997.

C.F. Bunting, J.R. Hackworth, and R.L. Jones, "Feasibility Study of a Wireless Interactive System," Technology Application Center (TAC) / Consulting Associates Inc. (CAI), Summer 1995.

C.F. Bunting, "Elimination of Electromagnetic Interference in a Multimedia Podium," Final Report for TAC/CAI, July, 1995.

C.F. Bunting, "The Preliminary Development of a Radiometry System for the Microwave Characterization of Metal Thin Films," ODU Faculty Research Program, October, 1994, Final Report

GRANTS AWARDED

R.A. Cheville, (principal investigator), C.F. Bunting (co-principal investigator), NSF Proposal Number 0230695, Relevancy Enhancement Achievement by Laboratories and Lecture Integrated for Engineering Education (REAL LIFE) Adoption of a Relevant Undergraduate Curriculum, 10/02 – 9/03, \$267,959.

C. F. Bunting (principal investigator), "Field Penetration Studies - Statistics and Bounding." ODU Subcontract for NASA Langley Research Center. Contract number AA-5-69362, 1/1/02 – 12/31/03, \$70,000.

C.F. Bunting (principal investigator) and L. Vahala (co-principal investigator), "Field Penetration Studies – Statistics and Bounding ," NASA Langley Research Center, 1/1/2001 – 12/31/2004, \$171,411.

C.F. Bunting (principal investigator), "The Characterization and Extension of a Mode Stirred Chamber," NASA-LARC, Graduate Fellowship, 6/1/98 - 5/31/99, \$22,000.

C.F. Bunting (principal investigator) and D. T. Nguyen (co-principal investigator), "Finite Element Analysis of Reverberation Chambers," NASA Langley Research Center, 1/1/98 – 12/31/2000, \$193,508.

C.F. Bunting (principal investigator), ASEE/LARC Summer Faculty Fellowship. 6/2/97 - 8/15/97, \$11,000.

C.F. Bunting (principal investigator), "The Characterization and Extension of a Mode Stirred Chamber," NASA-LARC, Graduate Fellowship, 6/1/97 - 5/31/98, \$22,000.

Anne Pierce (principal investigator), S. Bawab (co-principal investigator), G. Gerdin (co-principal investigator), C. F. Bunting (co-principal investigator), et. al. NASA-HQ., 1/1/97-12/31/99, \$35,000, Virginia Balloon Launch Program.

C.F. Bunting (principal investigator), "The Characterization and Extension of a Mode Stirred Chamber," NASA-LARC, Graduate Fellowship, 6/1/96 - 5/31/97, \$22,000.

C.F. Bunting (principal investigator) , J.R. Hackworth (co-principal investigator) , R.L. Jones (co -principal investigator), “Wireless Interactive System Design and Prototyping,” Technology Application Center(TAC) / Consulting Associates Inc. (CAI), 12/11/95 - 11/15/96, \$77,290.00.

Christopher Osgood (principal investigator) and C.F. Bunting (co-principal investigator), “Biological effects of Combined Exposure to Electromagnetic Fields and Chemical Mutagens,” Jeffress Foundation, August 1996, \$59,962.

C.F. Bunting (principal investigator) , J.R. Hackworth (co-principal investigator), R.L. Jones (co- principal investigator) , “Feasability Study of a Wireless Interactive System,” Technology Application Center (TAC) / Consulting Associates Inc. (CAI), Summer 1995, \$3,627.00.

C.F. Bunting (principal investigator), “Elimination of Electromagnetic Interference in a Multimedia Podium,” TAC/CAI, May 1995, \$6100.

C.F. Bunting (principal investigator), “The Preliminary Development of a Radiometry System for the Microwave Characterization of Metal Thin Films,” ODU Faculty Research Program, October, 1994, \$3710.

C.F. Bunting (principal investigator), “NASA/ODU Microwave Technology Program,” NASA LARC, November 1994, \$29,280.

GRANTS APPLIED FOR

C.F. Bunting, (principal investigator), and J.M. Chung, "Realistic Wireless Communication Test/ Measurement for Advanced Military Communication Device Development", Department of Defense, \$235,038. August 2002.

C. F. Bunting, (principal investigator), "Antenna Systems for the Reduction of Size and Signature of Multi-band Tactical Antennas", DEPSCoR Pre-proposal to the Department of Defense, \$750,000, August 2002.

R.A. Cheville, (principal investigator), C.F. Bunting (co-principal investigator), NSF Proposal Number 0230695, Relevancy Enhancement Achievement by Laboratories and Lecture Integrated for Engineering Education (REAL LIFE) Adoption of a Relevant Undergraduate Curriculum, 10/02 – 9/03, \$267,959.

C.F. Bunting (principal investigator), Major Research Instrumentation “Acquisition of Instrumentation for Robust Electromagnetic Field Testing,” NSF Proposal number 0216361, 7/1/02 – 7/1/03, \$395,534.

- C. F. Bunting (principal investigator), "Field Penetration Studies - Statistics and Bounding." ODU Subcontract for NASA Langley Research Center., 1/1/02 – 12/31/03, \$60,000.
- C.F. Bunting (principal investigator) and L. Vahala (co-principal investigator), "Field Penetration Studies – Statistics and Bounding ," NASA Langley Research Center, 1/1/2001 – 12/31/2004, \$171,411.
- C.F. Bunting (principal investigator) and L. Vahala (co-principal investigator), "Field Penetration Studies – Statistics and Bounding ," NASA Langley Research Center, 1/1/2001 – 12/31/2004, \$193,508.
- C.F. Bunting, et.al. (principal investigator), Part of the "Halogen Occultation Experiment for the Space Station," NASA., 6/1/00 - 8/30/04, \$119,242.
- C.F. Bunting (principal investigator), "Improved HIRF/EMC Operational Assessment using Objective Statistical Methods," Scientific Applications and Research Associates (SARA), Inc., 4/1/00 - 9/30/04, \$265,000.
- C.F. Bunting (principal investigator), "Low Frequency Characterization of Reverberation Chambers," National Science Foundation, 8/15/99 - 8/14/03, \$199,997.
- C.F. Bunting (principal investigator), "The Characterization and Extension of a Mode Stirred Chamber," NASA-LARC, Graduate Fellowship, 6/1/98 - 5/31/99, \$22,000.
- C.F. Bunting (principal investigator) and D. T. Nguyen (co-principal investigator), "Finite Element Analysis of Reverberation Chambers," NASA Langley Research Center, 1/1/98 – 12/31/2000, \$193,508.
- C.F. Bunting (principal investigator), ASEE/LARC Summer Faculty Fellowship. 6/2/97 - 8/15/97, \$11,000.
- C.F. Bunting (principal investigator), "The Characterization and Extension of a Mode Stirred Chamber," NASA-LARC, Graduate Fellowship, 6/1/97 - 5/31/98, \$22,000.
- C.F. Bunting (principal investigator) and "Electromagnetic Modeling of Monolithic Microwave Integrated Circuits," Innovative Aerodynamic Technologies (IAT), 1996, \$30,000.
- Christopher Osgood (principal investigator) and C.F. Bunting (co-principal investigator), "Biological effects of Combined Exposure to Electromagnetic Fields and Chemical Mutagens," Jeffress Foundation, August 1996, \$59,962.

Christopher Osgood (principal investigator), C.F. Bunting (co-principal investigator) , and L. Vahala (co-principal investigator), “Biological effects of Combined Exposure to Electromagnetic Fields and Chemical Mutagens,” NIH, August 1996, \$112,151.

Anne Pierce (principal investigator), S. Bawab (co-principal investigator), G. Gerdin (co-principal investigator), C. F. Bunting (co-principal investigator), et. al. NASA-HQ., 11/1/96, \$35,000.

Christopher Osgood (principal investigator) and C.F. Bunting (co-principal investigator), “Biological effects of Combined Exposure to Electromagnetic Fields and Chemical Mutagens,” Jeffress Foundation, February 1996, \$71,535.

C.F. Bunting (principal investigator), “The Characterization and Extension of a Mode Stirred Chamber,” NASA-LARC, Graduate Fellowship, February, 1996, \$22,000.

C.F. Bunting (principal investigator), J.R. Hackworth (co-principal investigator), R.L. Jones (co-principal investigator), “Wireless Interactive System Design and Prototyping,” Technology Application Center(TAC) / Consulting Associates Inc. (CAI), 12/11/95 - 8/15/96, \$77,290.00

C.F. Bunting (principal investigator), J.R. Hackworth (co-principal investigator), R.L. Jones(co-principal investigator), “Feasibility Study of a Wireless Interactive System,” Technology Application Center(TAC) / Consulting Associates Inc. (CAI), Summer 1995, \$3,627.00

C. F. Bunting (principal investigator) and Robin Cravey (co-principal investigator), “Development of a Radiometer System for the Microwave Characterization of Thin Films,” The NASA Director's Discretionary Fund, July 1995, \$150,000.

C.F. Bunting (principal investigator), “Elimination of Electromagnetic Interference in a Multimedia Podium,” TAC/CAI, May 1995, \$6100.

C.F. Bunting (principal investigator), S. Albin (co-principal investigator), and R.F. Harrington (co-principal investigator), “Development of a Radiometer System for the Microwave Characterization of Thin Films,” National Science Foundation - Instrumentation for Materials Research Program, October 1994, \$336,433.

C.F. Bunting (principal investigator), “The Preliminary Development of a Radiometry System for the Microwave Characterization of Metal Thin Films,” ODU Faculty Research Program, October, 1994, \$3710.

C.F. Bunting (principal investigator), “NASA/ODU Microwave Technology Program,” NASA LRC, November 1994, \$29,280.

Graduate Student Advising:

Graduate committee membership

Fall 2001	Matthew T. Reiten	Ph.D		X
Fall 2001	Kannan Srinivisan	M.S.	T	X
Fall 2001	Stacee A. Harmon	M.S.	T	X
Fall 2002	Mohammed A. Mathe	M.S.	C.C.	X

Other (RA's) not formally submitted plans

Fall 2001	Zulfiqar	M.S.	T	Advisor
Fall 2001	Shih-Pin Yu	M.S.	T	Advisor

HONORS AND AWARDS:

- Fellowships:
 - E.I. DuPont, 1991-1994 (\$4000/year)
 - Bradley (EE Dept.), 1991-1994 (\$12,000/year +tuition)
 - Pratt Presidential 1989-90 (\$1,200/year)
- Awards:
 - Engineering and Technology Award for Academic Excellence in Engineering Technology, 1989
 - Blackwell Award for Excellence in Grad. Research, 1992 (VPI)
 - Old Dominion University - Electrical Engineering Technology Outstanding Professor Award - 1995 - 1996
 - Teletechnet Faculty of the Year - 1995 – 1996
 - **Best paper in session award** for “Shielding Effectiveness, Statistical Characterization, and the Simulation of a Two-dimensional Reverberation Chamber using Finite Element Techniques,” Proceedings of the 19th National Digital Avionics Systems Conference (DASC) in Philadelphia, PA., October 2000.
- Honor societies:
 - Tau Alpha Pi, Phi Kappa Phi, and Alpha Chi, 1989

SERVICE TO THE PROFESSION

- Institute of Electrical and Electronics Engineers (IEEE), 1989-present.
 - In societies: Microwave Theory and Techniques (MTT),
 Antennas and Propagation (APS), and
 Electromagnetic Compatibility (EMC)

- Served as a reviewer for IEEE Transactions in Electromagnetic Compatibility

- Served on IEEE EMC-S P1597 Working Group on Computational Electromagnetics Standards, Aug. 2002-present

- Served on EMC society committee TC-9: Committee for Computational Electromagnetics, Webmaster for committee

- Antenna Measurement and Techniques Association (AMTA), 1995-present

- Applied Computational Electromagnetic Society (ACES), 2001-present
 Webmaster for ACES Newsletter (December 2001 – present)

- Workshop chair for 2002 IEEE EMC Symposium on Computational Methods in Electromagnetics.

- Reviewer for the United States Civilian Research and Development Foundation (CDRF) for the Independent States of the Former Soviet Union.

UNIVERSITY SERVICE

Oklahoma State University

Department Committee service:

Undergraduate Programs

Recruiting and Publicity committee (organized Fall 2001 Engineering Lab tour)

Board of Visitors

College Committee service

Hall of Fame Committee

The CEAT Technical Writing Committee

The CEAT Humanities and Social Sciences Committee

Received Full membership in the Graduate Faculty Council

Served as Faculty Marshall at Fall Convocation

Old Dominion University

• Industrial Non-Credit Courses:

- “Your Hands-On Guide to the Internet” (4 hours)

- “Advanced Navigating the Internet” (7 hours)

- “Fundamentals of Engineering” Exam Review (6 hours) – every

Spring and fall since 1996

• Summer Engineering Camp 1995, 1996 - “Navigating the Internet” (20 hours)

• Acted as ODU’s coordinating host for the 1995 Antenna Measurement and Techniques Association (AMTA) conference in Williamsburg, VA.

• Served on the University Strategic Planning Committee beginning in early Summer 1998 through Fall 1999. Subcommittees: National Prominence and Distance Learning.

• Served on the College Library Committee for academic year 1999.

• Served on the College Strategic Planning Committee for academic year 1999.