Shaukat N. Goderya, PhD

Director
Program for Astronomy Education and Research and
Associate Professor of Physics

ADDRESS: Office: College of Science and Technology
Tarleton State University
Box T-930
Stephenville, Texas 76402
Phone: 254-968-9730
Email: goderya@tarleton.edu

EDUCATION

PhD: Physics (Observational Astronomy & Computational Astrophysics), University of Nebraska-Lincoln, USA, August 1995

MS: Astronomy, University of Nebraska-Lincoln, USA, December 1991

MS: Physics (Material Science and Electronic Instrumentation), Southern Illinois University at Carbondale, USA, May, 1989

BSc. (Hons) Physics (Nuclear Physics). University of Karachi, Pakistan.

PROFESSIONAL WORKSHOPS

1. San Marcos State University: NSF Grant writing workshop, February 2011
2. Illinois State University: Grant writing workshop
3. American Association of Physics Teachers: Intro to standardized assessment instruments, summer 2003
4. American Association of Physics Teachers: Introductory Instructional Laboratories, summer 2003
5. American Association of Physics Teachers: Advanced and Intermediate Instructional Labs, summer 2003
6. Latin-American School of Astronomy on Interacting Binary Stars, Tonantzitla, Puebla, Mexico July 1995

RESEARCH AREAS OF INTREST

1. Astronomy & Astrophysics: Observational Astronomy, Small Telescopes, Instrumentation, CCD Photometry, Eclipsing Binary Stars, Transit monitoring of Exo-planets, Automated classification tools in Astronomy, Data Mining and Artificial Neural Networks in Astronomy
2. Physics Education: Inquiry Based Teaching and Learning, Teaching Physics and Astronomy with Technology, Computer Based Laboratory Activities for Introductory Physics and Astronomy.

STATEMENT OF EXPERIENCE

1) Administration, Management and Operation of Planetarium and Observatory: Since 2005, I have been involved in the construction, setup and operation of the 32 inch remotely controlled optical telescope at Tarleton State University. In 2008 I became the Director of Program for Astronomy Education and Research at Tarleton State University. My activities have been to oversee the budget, operation and maintenance of the planetarium and observatory. I also provide technical support services for microwave communications, computer hardware, software management, networking, maintenance and training in the use of research software, installation and upgrade of astronomical and computer equipment and services related to outreach recruitment and grant seeking. Thus I can provide all technical expertise related to establishment, operation and setup of an astronomical observatory.
2) An international curriculum development effort: Involved as PI, in the development of teacher guides for potentially 15,000 elementary school teachers for two mission scenarios *Rendezvous with a comet* and *Voyage to Mars* for Challenger Learning Centers in US, Canada and Great Britain. Tarleton state University is listed as one of the institution involved with the project. This work was funded ($49,960) by NASA/STSCI IDEAS program (HST-ED-90285.01-A), "Challenger Learning Center Curriculum Development Project. Further information can be provided if requested and the teacher guides are available at: http://www.phy.ilstu.edu/~wenning/clcrendezvoustg/index.html http://www.phy.ilstu.edu/~wenning/clcvoyagetomars/index.html
3) Physics and Astronomy Education: Interest in this area is primarily in the application of new research that has been done in physics education to computer aided laboratory instruction. Inquiry based activities serve as one example and involves developing inquiry based laboratory experiments at the undergraduate level, writing activities, developing laboratory setups handouts and configuring educational software applications.
4) Observational Optical Astronomy: Doctoral dissertation in observational astronomy with emphasis in CCD photometry and light curve modeling of eclipsing binary stars. Involved in this area for the last 16 years and have published several papers. Collaborated with astronomers from various organizations including NASA, Kepler mission. This interest has resulted in funded research (over $30K) as well as involvement of several undergraduate and graduate students. Another area of research interest is in transit monitoring of exo-plantes.
5) Computational Astrophysics: Use scientific visualization tools to develop automated galaxy classifiers. The project is interdisciplinary with computer science and incorporates knowledge from digital signal processing, fuzzy logic and artificial neural network research. This interest has resulted in funded research (over $10K), published papers and involvement of several undergraduate students in the research.
6) Radio Astronomy: Radio astronomy provides students to opportunity to learn the science of radio and its application to astronomy. An activity in which students use their skills learned in laboratory and their physics, astronomy and engineering courses to solve real world scientific problems. Rapid growth in communication and computer technology has enabled us to build very efficient small radio telescopes out of TV satellite dishes. These telescopes have even been used to carry out scientific research. My interest is in building and using such small radio telescope to introduce the student to the science of radio astronomy. The present effort has generated funding of over $10K in student stipends and equipment grant and conference posters authored and presented by students.
7) Teaching: My teaching experience spans over 25 years. I have taught a wide variety of physics and astronomy courses, both at the graduate level and undergraduate level. Most of the teaching in the last five years has been at the undergraduate level and particularly at the

introductory level, where I have incorporated new ideas in teaching physics and astronomy based on inquiry oriented and problems solving strategies. I have learned over many years that the traditional style of lecturing now no longer works well with the present student population that is highly technology oriented. Thus my present teaching philosophy has been on engaging student in the class rooms by way of inquiry oriented demonstrations, hands on activities, and building problem solving skills by way of applications to real world problems.

EMPLOYMENT HISTORY

Director:	Programs for Astronomy Education and Research, Tarleton State University, June 2008 - Present
Associate Professor:	Tarleton State University, September 2010 - Present
Assistant Professor:	Tarleton State University, September 2005 – August 2010
Coordinator:	General Education Laboratories, Illinois State University, August 1998 - August 2005
Visiting Faculty:	Illinois State University, August 1997 – May 1998
Lecturer:	Bradley University, August 1996 – August 1997
Adjunct Professor:	Doane College, August 1995 – May 1996
Adjunct Professor:	University of Nebraska, August 1995- May 1996

CURRENT PROFESSIONAL ASSIGNMENTS

1. Direct the activities of the program for Astronomy Education and Research
2. Teach all level of undergraduate physics and astronomy courses.
3. Participate in Physics, Astronomy and Engineering related activities of the department.
4. Pursue scholarly activities in computational astrophysics and observational astronomy.
5. Provide service to University and Community.

COMPUTER LITERACY

Operating Systems:	Unix/Linux, PC/Windows, Apple
System Administration:	Linux, Windows
Hardware:	PC
Web Development:	Html, Adobe Suite
Programming:	C, FORTRAN, Unix Tools
Computer Science:	Digital Signal Processing, Artificial Intelligence
Astronomy Applications:	IRAF, IDL , AIP4WIN, Wilson-Devinney Modeling, Maxim DL
Office Applications:	Microsoft Office, Tex/LaTex
Instructional Applications:	WebAssign, PASCO (Data Studio)

PROFESSIONAL AFFILIATIONS

- AAS - American Astronomical Society

- IEEE – Institute of Electronics and Electrical Engineers
- AAPT - American Association of Physics Teachers
- Sigma Xi
- AAPT – Texas Chapter
- Texas Space Grant Consortium

PUBLICATIONS

Peer Reviewed

1. Goderya, S. N**.,** Sykes, T., Batalha, N. M., Caldwell, D. A., Jenkins, J. M., Borucki, W. J., "The First Light Curve Analysis of a Newly Discovered Short- Period Semi-Detached Algol-Type Binary CygIV 16062", Submitted for publication to Information Bulletin on Variable Stars (IBVS), Commissions 27 and 42 of International Astronomical Union (IAU), Manuscript under review.
2. Goderya S. N., Sykes T., Bonomo, T. A. Gunn, J. and Hakes B. "Photometric Investigation and Absolute Dimensions of the Eclipsing Binary Star BX Dra" , Submitted for publication to Information Bulletin on Variable Stars (IBVS), Commissions 27 and 42 of International Astronomical Union (IAU), Manuscript under review.
3. Goderya S. N., Sajeeth N. Philip and Jonathan Andreasen "Advances in Automated Algorithms for Morphological Classification of Galaxies based on Shape Features" Proceedings of the Astronomical Data Analysis Software and Systems XIII October 2003, Astronomical Society of the Pacific Conference Series Volume 314, p 617, eds. Francois Ochsenbein, Mark G. Allen and Daniel Egret.
4. Goderya S. N., S. M. Lolling "Morphological Classification of Galaxies using Computer Vision and Artificial Neural Networks: A Computational Scheme", 2002, Astrophysics and Space Science Journal, 279, No. 4, p377-387.
5. Goderya, Shaukat Naaman. "Doing Research on Eclipsing Binary Stars with Small Telescope and PC computers." Astrophysics and Space Sciences 282.1 (2002): 121-130.
6. Goderya S. N., Leung K. C. and Schmidt E. G., "Photometric Investigation of the Eclipsing Binary Star KN Per", 1998, Astrophysics and Space Science Journal, 254, 295
7. Goderya S. N., Leung K. C. and Schmidt E. G., "Photometric Study of Selected Zero-Age Contact and Evolved Contact Binary Systems", 1997, The Third Pacific Rim conference on Recent Development on Binary Star Research, Astronomical Society of the Pacific conference, Vol. 130, edited by K. C. Leung, p 219-222
8. Goderya S. N., Leung K. C. and Schmidt E. G., "Indications of third light in the Photometric solutions of contact system DN Aur" 1997, Astrophysics and Space Science Journal, 246, 291
9. Goderya S. N., Leung K. C. and Schmidt E. G., "Photometric Investigation of the short period eclipsing binary star V719 Her" 1996, Astrophysics and Space Science Journal, 243, 315
10. Goderya S. N., Leung K. C. and Schmidt E. G., "Photometric study of V508 Cygni" 1995, Astronomical Journal 110, 346
11. Goderya S. N. and Schmidt E. G., Be Stars in young Clusters, 1994, Astrophysical Journal, 426, 159
12. Farooqui Z. A. and Goderya S. N. "Establishment of an Observatory Housing a 1.5 m Telescope: The Case for Pakistan to Join NORT", Seminars of the United Nations

Program on Space Applications, Volume Number 13, Selected Papers from Activities Held in 2001 (In Press).

Technical Reports

1. Goderya S. N. VISIT TO SPACE AND UPPER ATMOSPHERE RESEARCH COMMISSION OF PAKISTAN AS TOKTEN CONSULTANT UNDER THE UNDP/TOKTEN PROGRAM submitted to Government of Pakistan and United Nations Development Program on 13 September 1999
2. Goderya S. N., Farooqui S. Z., Ale-Mohammad, FEASIBILITY REPORT FOR THE ESTABLISHMENT OF AN ASTRONOMICAL OBSERVATORY CONTAINING A 1.5-M TELESCOPE submitted to Space and Upper Atmosphere Research Commission of Pakistan on 13 August 1999.

Conference Presentations and Posters

1. Leaveck, Katherine, Goderya S. N., Little B., "Automated Classification of Eclipsing Binary Stars Using Fourier Descriptors and Artificial Neural Networks', American Astronomical Society 217th conference, Seattle, Washington, January 2011.
2. Goderya S. N., Sykes, Teresa, M., "Photometric Investigation of the Eclipsing Binary Star BX Dra", 2006, American Astronomical Society 209th conference, Seattle, Washington, January 2007
3. Goderya, S. N. & Hibbs M**.** "Tarleton State University Observatory and Planetarium: A Unique Facility for Education and Research for K-12, Undergraduate and Graduate Students", American Astronomical Society 207th meeting, January 2006,
4. Goderya, S. N., "Research in Contact Binary Stars and Morphological Classification of Galaxies", A Workshop to Foster Broader Participation in NASA Space Science Missions and Research Programs, Chicago, June 28-29, 2004
5. Goderya S. N., Sajeeth N. Philip and Jonathan Andreasen "Advances in Automated Algorithms for Morphological Classification of Galaxies based on Shape Features" Astronomical Data Analysis Software and Systems XIII, Strasbourg, France 12-15 October 2003
6. Goderya S. N. "How to use Computer Vision and Artificial Neural Network for Automated Classification of Galaxies" Tenth UN/ESA workshop on Basic Space Science, Exploring the Universe: Sky Surveys, Space Explorations and Space Technologies, 25-29 June 2001, Reduit, Mauritius.
7. Goderya S. N. "Doing Research on Eclipsing Binary Stars with Small Telescope and PC Computers" Tenth UN/ESA workshop on Basic Space Science, Exploring the Universe: Sky Surveys, Space Explorations and Space Technologies, 25-29 June 2001, Reduit, Mauritius.
8. Goderya S. N., and Patrick C. McGuire "Using Neural Networks to Classify Digitized Images of Galaxies" (197th Meeting of AAS, January 2001, San Diego, California).
9. Goderya S. N., "Automatic Morphological Classification of Galaxies using Computer Vision and Artificial Neural Networks: A description of the computational scheme" (194th Meeting of AAS, June 1999, Chicago, Illinois).
10. Goderya S. N., "Automatic recognition and classification of galaxies using computer vision techniques", April 1997, IAAPT, (Illinois section of the AAPT meeting, October 1996, Bloomington, Illinois)

11. Goderya S. N., Leung K. C., and Schmidt E. G., 1996, IAAPT, “Photometric Investigation of the evolved contact binary star DN Aur”, (Illinois section of the
12. AAPT meeting, October 1996, Bloomington, Illinois)
13. Goderya S. N., Leung K. C., and Schmidt E. G., 1995, Third Pacific Rim Conference, Recent Developments on Binary Star Research “Low Mass Evolved Contact Systems: V508 Cyg, V719 Her, DN Aur and KN Per”, October 1995 Ciang Mai, Thailand.
14. Goderya S. N., 1995, Latin American School of Astronomy on Interacting Binary Stars “Photometric Study of Zero-Age and Evolved Contact Binary Stars”, July 1995, INAOE, Tonantzintla, Puebla, Mexico.
15. Goderya S. N., Leung K. C. and Schmidt E. G., 1995, American Astronomical Society, “Photometric Study of the Short Period Binary Star V719 Her”, (185th Meeting of AAS, January 1995, Tucson, Arizona).
16. Goderya S. N., Leung K. C. and Schmidt E. G., 1994, American Astronomical Society, “Photometric Study of V508 Cyg”, (183rd Meeting of AAS, January 1994, Washington D.C).
17. Goderya S. N., and Schmidt E. G., 1993, “Be Stars in Young Clusters”, (23rd Mid-America Regional Astrophysics Conference (MARAC), April 1993, Kansas City, Missouri).
18. Hussain, S. A., Siddiqui, K. A. and Goderya, S. N., “Tests of Gravitation”, Proceedings of the First Seminar on Albert Einstein, Vol. 1, March, 1986, Dept. of Physics, University of Karachi.
19. Sykes T. & Goderya, S. N. **,** “Research on Eclipsing Binary Stars at Tarleton State University’s Observatory, Tarleton State University Research Symposium, April 2006
20. Kareem C. Carr, Shaukat Goderya, "Automated Classification of Galaxies Using Light Intensity Distribution", Fourteenth Annual Argonne Symposium for Undergraduates in Science, Engineering and Mathematics & The Central States Universities, Incorporated (CSUI), Argonne National Laboratory, October 24-25, 2003
21. Tony Bonomo, Shaukat Goderya, "Photometric Analysis of Binary Star BX DRA", Fourteenth Annual Argonne Symposium for Undergraduates in Science, Engineering and Mathematics & The Central States Universities, Incorporated (CSUI), Argonne National Laboratory, October 24-25, 2003
22. Jonathan Andreasen, 2003 “Automated Galaxy Classification using Shape Features”, Argonne Undergraduate Symposium (Oral Presentation)
23. Tony Bonomo, 2003, “Photometric Study of Eclipsing Binary Star Bx Draconis”, Illinois State University Undergraduate Symposium (Poster Presentation)
24. Jonathan Andreasen, 2003 “Automated Galaxy Classification using Shape Features”, Illinois State University Undergraduate Symposium (Poster Presentation)

ORAL PRESENTATIONS

Invited Talks, Colloquiums and Seminars

1. Goderya S. N., “Recent discoveries by the Hubble Space Telescope”
2. June 14th, 2000, presented at the Normal Rotary Club. Normal, Illinois.
3. Goderya S. N., “Automated Morphological Classification of Galaxies using Computer Vision and Artificial Neural Networks: A description of the computational scheme”, April 30th, 1999, presented at Department of Physics and Astronomy, University of Missouri St. Louis, Missouri

4. Goderya S. N., "Scientific Frontiers with the Hubble Space Telescope", presented at VI National Symposium in Frontiers in Physics, 18 December 1997, at Department of Physics, Quaid-i-Azam University, Islamabad, Pakistan
5. Goderya S. N., "Astronomy Research with Small Telescopes", presented on 1 January 1998 at the Space and Atmospheric Research Center (SPARCENT) of SUPARCO, Karachi, Pakistan.
6. Goderya S. N., "Research in Observational Astronomy and Computational Astrophysics at Small Institutions", presented at VI National Symposium in Frontiers in Physics, 18th December, 1997, at the Department of Physics, Quaid-i-Azam University, Islamabad, Pakistan
7. Goderya S. N., "Scientific Frontiers with the Hubble Space Telescope", presented on 7th January 1998 at Department of Physics, University of Karachi, Pakistan.
8. Goderya S. N., "Zero-Age and Evolved Contact Binary Stars", presented at Peoria region Sigma Xi seminar series, September 1996, Bradley University.
9. Goderya S. N., "Contact Binary Stars: Doing Observations and Research", presented at the regional meeting of the Peoria High School teachers, September 28th 1996, Bradley University.
10. Goderya S. N., "Learning about Astronomy through the Internet", presented to freshman students intending to major in physics and astronomy on October 22nd 1996, at Physics Department, Bradley University
11. Goderya S. N., "Contact Binary Stars: Their Types and their Evolution", presented at the Physics seminar series of Bradley University physics department on November 1st 1996.

Informal Lectures

1. Goderya S. N., "Applications of Fourier Theory to Galaxy Classification", 13th February, 2004, AMO Seminar Series, Department of Physics, Illinois State University, Normal, IL
2. Goderya S. N., "Automated Segmentation Algorithm for Galaxy Classification", March, 2003, AMO Seminar Series, Department of Physics, Illinois State University, Normal, IL
3. Goderya S. N., "Possibility of Neural Networks in AMO Physics II", 1st April, 1999, AMO Seminar Series, Department of Physics, Illinois State University, Normal, IL
4. Goderya S. N., "Possibility of Neural Networks in AMO Physics I", 6th April, 1998, AMO Seminar Series, Department of Physics, Illinois State University, Normal, IL

RESEARCH COLLABORATIONS

Research Projects with Undergraduate and Graduate Students

These research projects have resulted in 14 student conference presentation and generated and over $15K in student scholarships and research assistantships.

- Katherine Leaveck, Spring 2009 – Spring 2011
    - Automated Classification of Eclipsing Binary Stars using Artificial Neural Networks
    - Wilson-Devinney modeling of Eclipsing Binary Star NZ Cyg
- Jordan Hernendez – Fall 2009-present, Automated Classification of Eclipsing Binary Stars
- Courtney Sullivan – Summer 2010 – present

  - Constructing a Small Student Radio Telescope
  - Interferometry with Small Student Radio Telescope
- Jake Rhodes – Summer 2010 – present
  - Constructing a Small Student Radio Telescope
  - Interferometry with Small Student Radio Telescope
- James Boshart – Summer 2010 – present, Constructing a Small Student Radio Telescope
- Kelli Lewis – Summer 2010, Photometric Investigations of faint eclipsing binary stars
- Britt Long – Spring 208 – Spring 2009, Observing extra solar planets with Tarleton Telescope
- Monica Nelson – Summer 2009, FORTRAN Coding and Modification to Calculate the Fourier Coefficient from Light Curves of Eclipsing Binary Stars
- Shweta Saroha – Spring 2008 –Summer 2009, Search for New Variable Stars in CCD database for WY Tau
- Gabriel Woods – Summer 2008, Measuring CCD performance of the Tarleton State Telescope CCD system
- Anthony Raymond – Spring 2007 – Summer 2008, Monitoring Extra-Solar Planets with Tarleton Telescope
- Priyanka Sahai – Spring 2007 – Fall 2007, A platform independent code to run FORTRAN/C/C++ Research Code
- Avery McChristen – Fall 2006 – Spring 2008
  - Photometric Investigation of Eclipsing Binary WY Tau
  - Preliminary CCD testing and analysis
- Stephen Cohorn – Summer 2007, Electronic database generation of eclipsing binary stars for automated classification
- Amanda Couch – Spring 2006 – Summer 2007
  - Photometric Study of the Eclipsing Binary Star DU Lyra
  - Period determination and light curve construction of DU Lyra
- Josh Jenkins – Graduate student at Tarleton Identification of Eclipsing Binary star light curves using Fourier series.
- Teresa Sykes – Graduate student at Tarleton Light curve of Modeling of Eclipsing Binary Star BX Dra.
- Jonez Peterson – Spring 2006, Sophomore at Tarleton: Eclipsing Binary Stars
- Robert Mangleburger – Spring 2006, Sophomore at Tarleton: Reducing Astronomical data with IDL
- Tony Bonomo - fall 2002, sophomore at ISU: Photometric Study of Eclipsing Binary Star Bx Draconis (Independent Study project for 3 semesters).
- Kareem Carr - fall 2002, Junior at ISU: Galaxy Classification using Self-Organizing Maps (Research Project).
- Justin Anderson - fall 2002, senior at ISU: Investigation of invariant moments for classification of galaxies (Physics 390 Computational Research in Physics).

- Jonathan Andreason - fall 2002, senior at ISU: To apply the shape feature algorithm to images of galaxies and to analyze the data for classification of galaxies (Undergraduate Honors Research project II). This work has resulted in a conference proceeding.
- Marek Jacobs Spring - 2001, senior at ISU: To develop automated image thresholding algorithm using fuzzy algebra technique (Physics 390 Computational Research in Physics).
- Jonathan Andreason - fall 2001, Junior at ISU: To automate the shape feature extraction algorithm from images of galaxies (Research Project).
- Jonathan Andreason - spring 2000, sophomore at ISU: To develop a computational procedure to extract shape features from images of galaxies for automated recognition and classification using neural networks (Undergraduate Honors Research project I).
- Byron Musser - Spring 2000, senior at ISU: Automated Morphological Classification of Galaxies using raw images and unsupervised (Kohonen) Neural Networks (Physics 390 Computational Research in Physics).
- Scott E. Reynolds - Spring 2000, senior at ISU Evaluating the Performance of a supervised Neural Network Galaxy Classifier (Undergraduate Honors Research project I).
- Shawn Lolling - Spring 99, senior at ISU: Automated Morphological Classification of Galaxies using Supervised Neural Networks (Undergraduate Honors Research project I). This work produced a published paper.

Research Projects with other Astronomers

- Ron McDaniel's of Soft-Tech systems Inc. and Ron Diiulio of University of North Texas – Spectroscopic Observations of Eclipsing Binary Stars, ongoing at present
- Dr. Charles McGruder: Western Kentucky University – Study of Eclipsing Binary Stars discovered during the Search for extra solar.
- Dr. Mohammed Ali: University of Punjab, Pakistan – Small astronomical observatory for laboratory teaching and research
- Dr. Sajeet N. Philip: India – Neural Networks
- Dr. Patrick McGuire: Washington University, St. Louis, Missouri – Image Processing and Neural Networks

GRANTS AND AWARDS

- Tarleton State University URA grant, Summer 2011, $6000
- Tarleton State University URA grant, Summer 2010, $8000
- Tarleton State University ORG grant (ORG-09-Stars), Automated Identification of Contact Binary Stars Using Artificial Intelligence: September 2008 – August 31st 2009, $10,094
- Tarleton State University ORG grant (ORG-08-Stars), Automated Identification of Contact Binary Stars Using Artificial Intelligence: September 2007 – August 31st 2008, $21,773
- Tarleton State University ORG grant (ORG-07-Stars), Contact Binary Stars and the World of Artificial Intelligence, September 2006 – August 31st 2007, $15,885

- Tarleton State University ORG grant (ORG-06-Stars), Photometric Study of Contact Binary Stars with the Tarleton State University Astronomical Observatory, September 2005 – August 31st 2006, $14,767
- NASA/STSCI Ideas Program (HST-ED-90285.01-A), Challenger Learning Center Curriculum Development Project, April 1, 2005 – March 31, 2007, $49,962.
- Science Instructional Material Development – Pathways to Modern Science, Illinois State University, Funded from National Science Foundation (NSF).
- Conference Travel Grant – June 2004, NASA Space Science Center
- International Travel Grant - August 2003, American Astronomical Society
- International Travel Grant - April 2001, American Astronomical Society
- Avery fellowship - July 1995, University of Nebraska-Lincoln
- Participant Scholarship - July 1995 Instituto Nacional De Astrofisica, Optica Y Electronica (INAOE), Mexico
- Conference Travel Grant - January 1994 Sigma Xi, The Scientific Research Society

UNIVERSITY, COLLEGE AND DEPARTMENTAL SERVICE ACTIVITIES

- Aledo High School visit to Campus April 2010 – Recruitment Effort Activity
- Member of Faculty Development Committee, 2006-2009
- THECB's P-16 College Readiness initiative, 2008-Present
- Department of Engineering and Physics faculty meetings, discussions and service activities
- Member: Texas Electronic Coalition of Physics meetings.
- Engineering Physics Oversight Committee (EPOC): Member of the committee.
- Member of Physics Teaching & Education Committee, Department of Physics, Illinois State University Fall 2004 - 2005
- Member of the chair search committee at Illinois State University. 2000 -2001 academic year.
- Laboratory for Integrated Learning and Technology liaison for department of Physics, Illinois State University, 2000-present.

PROFESSIONAL AND SCHOLARLY SERVICE ACTIVITIES

- Proposal Review for Texas Space Grant Consortium, Spring 2011
- Proposal Review for Texas Space Grant Consortium, Spring 2010
- Session Chair: Experiments in Physics, Joint Spring
  Meeting of the Texas Section of APS, AAPT, and Zone 13 of SPS, April 3-4, 2009;
  Stephenville, Texas
- Session Chair: Astrophysics, Space Physics, Astronomy and Cosmology, Joint Spring
  Meeting of the Texas Section of APS, AAPT, and Zone 13 of SPS, April 3-4, 2009;
  Stephenville, Texas
- Proposal Review for Texas Space Grant Consortium, Spring 2009

- Session Chair: Astrophysics, Space Physics, Astronomy and Cosmology, Joint Spring Meeting of the Texas Section of APS, AAPT, and Zone 13 of SPS, March 6-8, 2008; Corpus Christi, Texas
- Oral Session Judge: Tarleton State University Undergraduate Symposium, October 2008
- Poster Session Judge: Texas A&M University System Pathways 6th Annual Student Research Symposium, October 2008
- Session Chair: Astrophysics and Geophysics and Nuclear and Atomic Physics, Joint
- Refereed journal article in Astrophysics and Space Science Journal, 2004
- Meeting of the Fifteenth Annual Argonne Symposium for Undergraduates in Science, Engineering and Mathematics & the Central States Universities, Incorporated (CSUI), November 5-6, 2004, Argonne National Laboratories, Argonne, Illinois
- Referee for Scholarly article for Monthly Notices of Royal Astronomical Society in 2003.
- Chair: Astrophysics and Space Science Session, 2003, Argonne Undergraduate Symposium

PUBLIC SERVICE AND OUTREACH ACTIVITIES

- Aledo High School Star Party April 2011
- Astronomy at Tarleton, Talk at Lions Club, March 2011
- Spring 2011 Star Party at the observatory
- Fall Star Party at the observatory
- Astronomy Badge Activity for Girls Scout, Fall 2010
- Physics and Engineering Camp, June 2010
- Star Party for the participants of the AAPT conference at Tarleton State University, 4th April 2009
- Fall 2009 Star Party at the observatory
- Science Summer Camp June 2009
- Engineering Camp July 2009
- Astronomy and with the Tarleton Telescope, Stephenville Scout Group, March, 2009
- Science Olympiad 2006-present – Stellar Astrophysics Event
- Backyard Astronomy: Presented to Cub Scouts of Dublin, Texas, February 10, 2009
- Interviewed for an article on Astronomy, “Close encounters”, Fort Worth Star Telegram, Saturday December 13, 2008
- Interviewed for an article on Astronomy, “Biggest full moon of the year on tap tonight” by
- Bill Hanna, html://www.star-telegram.com/804/story/1091230.html
- Tarleton Observatory tour and observing for the faculty and staff of College of Science and
- Technology, Tarleton State University, December 2008
- Acton Nature Center Public Observing Night April, 2008 – Presented a lecture and held night sky viewing with a Telescope for members and residents of Granbury, Texas.
- Fort Worth Amateur Astronomical Society event in the science building and tour of the

Observatory, 2006

- APS – High School Teacher luncheon meeting, Dallas, Texas
- Tour of observatory for Zephyr high school students.
- Presentation: Recent discoveries by the Hubble Space Telescope", June 14th, 2000, Presented at the Normal Rotary Club, Normal, Illinois
- Goderya S. N., and Goderya F. S. Assistant at Behlen Observatory, Math Vantage programs, Nebraska Educational Telecommunication Network, May, 1993
- Tour Guide at Behlen Observatory for Phoenix Boy Scouts Troop
- Observatory assistant at Public Observing session for several years.

TEACHING EXPERIENCE

Courses Taught

- Modern Physics (Physics 334)
- Quantum Mechanics (Physics 435)
- Stellar Astronomy (Physics 113)
- Planetary Astronomy (Physics 103)
- Fortran and Numerical Analysis (CS344)
- Fundamentals of Physics including laboratory component (Physics 105).
- Foundations of Inquiry (IDS100).
- Atoms to Galaxies (Physics 102).
- Statics for Engineers (Physics 152).
- University Physics I with Computer Aided Physics Labs (Physics 110, 122).
- University Physics II including traditional laboratory component (Physics 111).
- College Physics I including traditional laboratory component (Physics 108, 104).
- College Physics II including laboratory component (Physics 109, 105).
- Descriptive Astronomy including both indoor computational and outdoor observational laboratories (Astronomy 101).
- Introductory Astrophysics (Astronomy 204).
- Introduction to Modern Physics including selected experiments in Modern Physics (Physics 112)
- Statistical Mechanics and Thermodynamics including selected computational projects involving FORTRAN or C programming (Physics 325).
- Optics including selected experiments (Physics 330).
- Analog and Digital Electronics including experiments (Graduate level).
- Energy Physics (Graduate level).
- Nuclear Physics (Graduate level).

Courses Designed

- Astronomy Laboratory (AST 103L) Used CLEA (Contemporary Laboratory Experiences in Astronomy) and other experiments.

- Physical Science (PHY 108) Based on the recommendation of the American Association of Physics
- Teachers guide “Powerful Ideas in Physical Science”.

Developed Computer Based Laboratory Activities

- Graphical Analysis: Developed for Physics 102 offered by Department of Physics at Illinois State University
- H-R Diagram: Developed for Physics 102 offered by Department of Physics at Illinois State University
- Kepler-A Search for Habitable Planets: Developed for Physics 102 offered by Department of Physics at Illinois State University. This activity uses the Kepler software created by Dr. Koch and collaborators of the NASA Ames Research Center
- Free Fall Computer Simulation Experiment: Developed for Physics 105 offered by Department of Physics at Illinois State University. This activity requires Macintosh computers and Explorer software.

Developed Hands-On Laboratory Experiments

- Wave Nature of Light: Developed for Physics 102 offered by Department of Physics at Illinois State University. This activity requires PASCO optics experiment setup.
- Newton's Second Law: Developed for Physics 105 offered by Department of Physics at Illinois State University. This activity requires PASCO Dynamics Track setup.
- Simple Harmonic Motion: Developed for Physics 105 offered by Department of Physics at Illinois State University. This activity requires PASCO Dynamics Track setup.
- Microwaves: Developed for Physics 105 offered by Department of Physics at Illinois State University. This activity requires PASCO Microwave apparatus.
- Optics: Developed for Physics 105 offered by Department of Physics at Illinois State University. This activity requires PASCO optics experiment setup.