

TEACHING

Dr. Lopez has taught physics courses at all levels, supervised BS, MS and PhD students, modified curricula and develop teaching material for university and pre-college levels, especially for pre-K. Has written journal articles on educational topics, and has requested and obtained funds for educational activities. Additionally has created educational programs within the University, with local school districts and with other universities.

SYNERGISTIC ACTIVITIES

- An Integrative Science Success, Teaching and Retention Program for STEM Education. Project (funded by NSF) in which Dr. Lopez, along with faculty from Chemistry, Engineering and Education, introduced undergraduate students as Peer Leaders in the teaching of calculus-based physics courses.
- Partnership for Enhancing Teacher Education. Seminal project (funded by NSF) in which Dr. Lopez merged his physical science course for education majors with a science methodology course of the College of Education and moved it to the elementary schools. These courses were taught at eight schools in the El Paso area using inquiry-based teaching and constructivist methodologies. This project was recognized by Time magazine in the Jan. 8, 2001 article "The New College Try", www.time.com/time/education/article/0,8599,93264,00.html.
- Distance-Learning Physics MS program with UT Brownsville. To help the University of Texas at Brownsville develop its own MS program, Dr. Lopez and UTB's Dr. Mario Diaz designed a distance-learning program to allow UTB have graduate students taking courses remotely by cable in real time. The program benefitted approximately ten students and lasted four years until UTB's MS program was approved.
- Cooperative program with Universidad Autonoma de Cd. Juarez. To help the Univ. Autonoma de Cd. Juarez develop its own physics program, Dr. Lopez designed a cooperation program that allowed UACJ's students take physics labs at UTEP; Dr. Lopez alleviated the lack of faculty by teaching Modern Physics and Quantum Mechanics *pro bono publico*.
- Cooperative program with Universidad Autonoma de Colima. To help the Univ. Autonoma de Colima (UAC) develop its own physics program, Dean Thomas Brady, Dr. Lopez and Dr. Alfredo Aranda started a program that allowed UAC's faculty supervise UTEP MS physics students; the program also allowed the exchange of students in the summer.
- Development of new programs. Participated actively in the processes leading to the creation of the Ph.D. program in Computational Science and in the physics concentration in medical physics.

COURSES TAUGHT

- PHYS 1404 General Physics II Labs
- PHYS 1403 General Physics I Labs
- PSCI 2303, Physical Science I
- PSCI 3304, Physical Science II
- PHYS 4220, General Physics I
- PHYS 2421 General Physics I
- PHYS 2477, Intro to physics
- PHYS 3325 Survey of Modern Physics
- PHYS 4341 Electromagnetics I
- PHYS 4342 Electromagnetics II
- PHYS 4355 Intro to Quantum Mechanics
- PHYS 4356 Atoms, Molecules and Solids
- PHYS 4357 Relativity Nuclear and Particles
- PHYS 5195 Graduate Seminar
- PHYS 3521, Graduate Mechanics
- PHYS 5325, Graduate Math Physics
- PHYS 5341, Graduate Electrodynamics
- PHYS 5365 Graduate Advanced Statistical Physics
- MASE 6402/MME5401 Ph.D. Mat. Characterization

DIRECTION OF DISSERTATIONS AND THESES

Ph.D. Dissertation

- Mario Borunda, Ph.D. at Mexico's Instituto Politecnico Nacional, defended on Nov. 26, 1997.

MS Theses

- Rodrigo Gamboa Goñi, "The nuclear symmetry term", 2007. Now teaching high school in Mexico.
- Christian Escudero, "Nuclear Isoscaling", two publications, May 2007. Best Thesis Award 2008. Now a Ph.D. in Geology working at the University of Guadalajara in Puerto Vallarta.
- Carlos Martínez, Dec. 2006, co-supervised by Dr. W. Durrer. Now working in Industry in Mexico.
- Karen Castrejón, May 2006, "Distribution of Charges in a Wire". Now a physics lecturer at Univ. A. Cd. Juárez.
- Jesus Saenz, May 2006, "The Fermi Integral". Now Director of Eng. Physics Program at uacj.
- Armando Barrañon, M.S. degree in physics from Instituto Politecnico Nacional de Mexico, in May 2005, co-supervised with IPN's Dr. Fray de Landa. Now a professor at Universidad Autonoma Metropolitana in Mexico City.
- Luis Martin Sandoval, Aug. 2005, "The Linear Delta Expansion", in geology Ph.D. studies at UTEP.
- Jose Filadelfo Aguilar Andrade, Aug. 2005, now at the Benemerita Univ. de Puebla in Mexico.
- Olienka de la O Fernández, Aug. 2005, Report: "A code for biophysics", attended summer school in biophysics in Montreal, Canada in 2004, now in UTEP's MASE Ph.D. program.
- Sergio Yanuén Rodríguez, graduated in August 2004, in co-supervision with W. Durrer. Now in Ph.D. studies at Texas A&M University.
- Federico Lopez, August 2004, in co-supervision with W. Durrer. Now in Ph.D. studies at Texas A&M University.
- Luis Basurto, graduated in December 2004, one oral presentation at the meeting of the Mexican Society of Physics in 10/2004, now in Ph.D. studies in Computational Science at UTEP.
- Jesús Escamilla Roa, M.S. degree obtained in May 2003. Two publications, student presented his work at the V Latin American Symposia in Santos, Brazil (poster, 9/2003). Ph.D. FROM Vanderbilt University in 2008.
- Rafael Cárdenas, M.S. Degree, May 2002. Ph.D. from Texas Christian U. in 12/2007.
- Miguel Castro Colín, M.S. May 1998. Completed Ph.D. studies at U. Houston in 2004, now a researcher at the Max Planck Institute in Germany.
- Milijana Sukavcevic, M.S. May 1998. EDD from UTEP, 2003 now at Rice University.
- Batu Batu, M.S. May 1998. Employed by the State of Minneapolis.
- Xiaofang Mu, M.S. May 1998. Continued with Ph.D. studies in Computer Engineering at UTEP.
- Xiaoyu Wang, M.S. Aug. 1996, went for Ph.D. studies in Canada.
- Tim Robinson, M.S. May 1996, "Breakup of Small Nuclei ". Went for Ph.D. studies to Texas A&M University, now employed as high school teacher In Tahiti.
- Zehua Wu, M.S. May 1996, earned an M.S. in computer science at U. Houston.
- Raul Armendariz, M.S. August 1996, "The Search for Gravity Waves". Best Thesis of the year, JPL Cuesta Fellow from 1994 until 1996. Earned a Ph.D. in Physics at New Mexico State University.
- Ganesh Thondikulam, M.S. 8/1995, "Phase shifts of NN scatterings", employed in Minneapolis.
- Gildardo Rivas, M.S. August 1994, "The use of autocorrelation in the search for periodicities in spacecraft Doppler data as applied to gravity wave detection". Ph.D. at U. Washington, Seattle, 3/2004, now a professor at UACJ.

BS Thesis

- Manuel Antonio Ramos, “Nuclear Fragmentation” and “Surface studies”, B.S. degree awarded in 12/2003. Completed Ph.D. studies in Materials Science at UTEP and is now a professor at Univ. A.de Cd. Juarez.

SUPERVISION OF UNDERGRADUATE RESEARCH

- Manuel Oscar Saenz, Fall of 2010 to date.
- Enrique Ramirez Homes, 2009 to date.
- Juan García, 2009 to 2010.
- Jorge Muñoz, 2005 to 2008.
- Alán Dávila, 2002 to 2006.
- Christian Escudero, 2000 to 2005.
- Antonio Ramos, 2001 to 2002.
- Manuela Ortiz, 2001 to 2003.
- Yazmín Domínguez, 2001 to 2003.
- Azael Ávalos, 2000 to 2002.
- Martha Navarro, 1998 to 2001.
- Fabian Botello, summer of 1998.
- Miguel Cortez, 1997 to 1998.
- Karina Apodaca, 1997 to 1998.
- Jose Ricardo Correa, 1997 to 1998.
- Mario F. Borunda, 1997 to 2003.
- Carlos Velasco, 1995 to 1996.
- Rocio Gisel Olave, 1995 to 1998.
- Richard Coronado, 1995 to 1997.
- Jaime Morales, 1995 to 1998.
- Mike Carroll, 1994 to 1995.
- Raul Medellin, 1994 to 1996.
- Francis C. Hoyt, summer 1994.
- Veronica Alvarado, 1993 - 1994.
- Alfredo Aranda, 1993 to 1996.
- Mario Borunda Sr., 1992 to 1994.
- A. Guarnero, Fall 1991.
- F. D. Guzman, Summer 1991.
- Arturo Revilla, 1991 to 1992.
- Jose Ramirez, 1990 to 1991.
- Jose Lozano, fall 1990.

THESIS AND DISSERTATION COMMITTEES

- Nayeli Camacho, Mat. Sci. & Eng. PhD, 2012.
- Karina Puebla, Mat. Sci. & Eng. PhD, 2012.
- Sara Gaytan, Mat. Sci. & Eng. PhD, 2011.
- Manuel Ramos, Mat. Sci. & Eng. PhD, 2010.
- Cesar Santos, Mathematics MS, 2009.
- Enrique Díaz, Physics MS, 2009.
- Oscar Dena, Geology Ph.D. 2008
- Hector Garces, EE Ph.D. 2007
- Matías Ison, Physics Ph.D. 2006, Argentina.
- John Olgin, Physics MS, 2006
- José Valadez, Physics MS, 2005.
- Osvaldo Rodriguez, MASE Ph.D, 2005.
- Leticia Sifuentes, Computer Science MS, 2003
- Hector Gonzalez Huizar, MS Physics, 2003
- Roberto Arceo, MS Physics, 2003
- Alejandro Lugo, MS Physics, 2003
- Pablo Balenzuela, Ph.D. Physics Ph.D., 2002 Universidad de Buenos Aires, Argentina.
- Gopi Krishna Manne, ECE MS, 2002.
- Miguel Delgado, Geology MS, 2002.
- Hector Garcés, ECE MS, 2002.
- Miguel Angel Sagarnaga, ECE MS, 2002.
- Albert Peralez, Chemistry MS, 2002.
- Alejandro Puga, MS Physics, 2001.
- Charlie Torres, MS Physics, 2001.
- Leandro Trevino, Ph.D. Geology, 2001.
- Shu Chan, ECE MS, 1999.
- Gabriel Thomas, Ph.D. Elec. & Comp. Eng., 1998.
- Jae Sok Son, Elec. Ph.D. , Comp. Eng., 1998.
- Roberto Gabaldon, ECE MS, 1998.
- Anthony Smith, MS Physics , 1998
- Rodrigo Mendoza, ECE MS, 1997.
- Javier Vega-Pineda, ECE Ph.D. , 1997.
- Gabriel Osorio, ECE MS, 1997.
- Raymundo Olague, MS Mech. & Ind. Eng., 1996.
- Jesus Del Villar, ECE MS, 12996.
- Jose de la Rosa, ECE MS, 1996.
- Aldo Lucero, ECE MS, 1995.
- Chiouguey Joyce Chen, ECE MS, 1994.
- Sergio A. Chaparro, MS Physics, 1994.
- Rajendra Kumar, Mech. & Ind. Eng MS, 1993.
- Gabriel Thomas, ECE MS, Dr. B. Flores, 1993.

CURRICULUM DESIGN AND TEACHING MATERIAL

University Level

- PHYS 2421. Development of podcasts (MP4 and WMV) for lecture delivery, 2009, supported by STEP UP NSF grant.
- PHYS 2420/2421. Modification of content, development of teaching materials, in-class demos, and introduction of Peer Leaders, 2007- 2008, supported by STEP NSF grant.
- PHYS 3441 Electromagnetism. Modification of content and new teaching material, 2006.
- PHYS 3331 Thermal Physics. Modification of content and development of teaching material of PHYS 3331 in support to new faculty Dr. Tunna Baruah, Fall 2005.
- PHYS 3243: Radio Astronomy. A radio telescope designed and constructed for PHYS 3243, with Luis Basurto, 2005.
- PHYS 3325: Modern Physics. In-class demo "Bohr Model Spectroscopy", with elaboration of pre- and post-exams, in collaboration with lecturer Jaime Morales. Fall 2004. Tested in two Modern Physics Courses.
- Survey of Modern Physics. Introduction of web and powerpoint material for the teaching of PHYS 3325, Fall 2003.
- Alpha PIXE Spectroscopy. In-class demo for modern physics 2002. Tested in two Modern Physics classes in 2002.
- Modern Physics. Testing of three computer simulations to add an interactive component to the modern physics. With physics students Manuela Ortiz and Jazmin Dominguez. Testing occurred in 2001 and 2002.
- PHYS 5325. Design of distance-learning course and web-based material for UT Brownsville students, Fall 1999.
- UTEP-UT Brownsville Distance Learning Masters Program. Proposer, designer and director of the program. Memorandum of understanding reviewed in 2000, first graduate in 2002, second one in 2004.
- Termodinámica Nuclear. Preparation of a two-week course in Spanish for the 2nd Mexican Nuclear Physics School at Universidad Nacional Autónoma de México, Mexico City, 4/2001. Lecture notes published in a book.
- PSCI 3304. Design of course team-taught to education majors at Marion Manor Elementary in conjunction to ELED 3311. Fall 2000.
- Physical Science, introduction of science kits for elementary school in the class PSCI 3304, 1998.
- Modern Physics. Development of computer simulations to add an interactive component to the course Phys 3325.
- Nuclear, Particles and Relativity. Development of the curriculum for the new class Phys 3457. New physics course to use basic quantum mechanics to study applications in nuclear and particle physics. Relativistic kinematics was introduced. Spring of 1995.
- Computational Physics. To develop a computer laboratory with funding from the College of Science and from an IBM donation to the Physics Department, 1994.
- Introduction to Physics. Development of the curriculum for a new class Phys 2477. New physics course to introduce freshman physics majors to physics concepts and physics as a career. Fall 1994, 9 students.
- "Experiments for General Physics 4104", J. A. Lopez, Burgess International Group, 1994.
- "Experiments for General Physics 4103", J. A. Lopez, Burgess International Group, 1993.

Pre-K to 12 Level

- PHYS 2421. Development of podcasts (MP4 and WMV) for lecture delivery, 2009, supported by STEP UP NSF grant.
- Middle School Physics, Material for a two-day workshop for UTEP's MSP Staff Developers, 12/2005.
- Deepening Science Knowledge for High School Physics Teachers. Printed and Powerpoint material for a two-day bilingual workshop for teachers, 20 pages, July, 2005.
- Physics for Pre-K and K Students – Bilingual Seminar for Teachers. Printed and Powerpoint material for a bilingual seminar for teachers, 80 pages, June, 2005.
- "Universo - Almanaque Celestial 1996", published by McDonald Observatory of the University of Texas, 1/1/96. Contributed as technical editor.
- "Universo - Almanaque Celestial 1997", published by McDonald Observatory of the University of Texas, 1/1/96. Contributed as technical editor.
- "Universo" Compact Disks Audio material for general audiences. Pressed monthly describing the skies for many high schools and radio stations in the United States. Pressed by UT Austin/McDonald Observatory since the Fall of 1994. Contributed as technical editor. Since the Fall of 1994 to 2010.
- "La enseñanza de la física en pre-escolar", Activity guide prepared for a workshop on the "V Encuentro Estatal de Educación", Organized by Dirección de Educación Elemental del Gobierno del Estado de Chihuahua, Hotel Fiesta Inn, Ciudad Juarez, Chihuahua, Mexico, April 12, 2003, in Spanish.