

Dan G. Dimitriu, Ph.D., P.E.

Professor, Engineering Program Coordinator
Physics, Engineering, and Architecture Department

San Antonio College

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EDUCATION:

- **North Dakota State University**, Fargo, North Dakota, USA, Doctor of Philosophy in Engineering, 1993
- **Academy of Economic Sciences**, Bucharest, Romania, Master's Degree in Business Administration - Major in International Economic Relations, 1979
- **Polytechnic Institute of Bucharest**, Romania, Master of Science in Mechanical Engineering, 1970
- **Popular School of Arts**, Bucharest, Romania, Associate's Degree in Graphic Arts, 1976

LICENSURE INFORMATION:

- **Registered Professional Engineer** (Retired) - License #3177/State of North Dakota.
- **Certified SCUBA Diver** – PADI #84053081, 1984.
- **Teaching Certification** #3102, Bucharest, Romania, 1970.

LANGUAGE PROFICIENCIES:

- Romanian - Reading, writing, and speech: Excellent
- French - Reading, writing: Good; Speech: Fair
- Italian - Reading, writing: Fair; Speech: Poor

CITIZENSHIP: U.S.

PROFESSIONAL AFFILIATIONS (Past and Present):

- American Society for Engineering Education (A.S.E.E.), elected Vice Chair of Two Year College Division in 2005 and re-elected in 2007
- American Society of Mechanical Engineers (A.S.M.E.)
- Society of Automotive Engineers (S.A.E.)
- American Management Association (A.M.A.)
- International Society for Optics and Photonics (SPIE)
- Society of Plastics Engineers (S.P.E.), elected Vice President of Central Texas Section in 2000.

RELEVANT EMPLOYMENT HISTORY:

ENGINEERING COORDINATOR, Tenured Professor

Institution: **San Antonio College** - Physics, Engineering, and Architecture Department
San Antonio, Texas.

Period: **August 2001 to Present** – Engineering Coordinator

San Antonio College is the largest community college in Alamo Colleges and Texas.

Responsibilities: Supervise curriculum development and coordinate the structure of Engineering Program with the universities from the surrounding area for credit transfer and 2+2 agreements. Implement new technologies to support distance education. Teach Engineering and Physics classes such as Statics, Dynamics, Strength of Materials, Engineering Graphics, etc. **Accomplishments:** PI/CoPI for four N.S.F. grants, three from Department of Education, and two from NASA (Total over \$5,000,000) to increase enrollment and improve and modernize technical education at the Community College level. Appointed NASA's point of contact for Alamo Community College District since 2001 and coordinated NASA's Community College Aerospace Scholars Program for San Antonio. Initiated the EDGE (Early Development in General Engineering) summer program designed as Learning Communities to attract and retain high school students into engineering field and maintained a constant presence in the surrounding area high schools. Winner of four ACCD Education Improvement Mini Grants. Chaired "Engineering, a Community College Program" session at "Frontiers in Education 2002" Conference and co-authored several ASEE peer reviewed papers accepted for presentation at the 2004, 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, 2015, and 2016 ASEE Annual Conferences. Invited to participate in "Committee on Enhancing the Community College Pathway to Engineering Careers" at National Academy of Sciences. Site director for PREP Program at San Antonio College. Director of the first MESA Program in Texas at San Antonio College since 2007. Elected Vice Chair of the Two Year College Division of ASEE in 2005. Elected 2006 San Antonio College Piper Professor. Recipient of 2006 NISOD Excellence in Teaching Award. Named "San Antonio's Top Professor" by Scene in SA Monthly in 2006. Volunteered to review NSF proposals and papers submitted for presentation at ASEE, ASME, and Frontiers in Education conferences. Selected as NSTI Research Faculty Fellow at NASA – Johnson Space Center in Summer 2010. Selected as member of the Tuning Oversight Council for Engineering by Texas Higher Education Coordinating Board. In 2010 I was named Discipline Coordinator of all Engineering Programs from the five colleges forming the Alamo College District. Since 2002 I volunteered to be NASA's point of contact for Alamo Community College District. In fall of 2013 I participated as a faculty advisor for a team of students selected for Minority University Research and Education NASA Undergraduate Research program with Microgravity University.

CO-DIRECTOR

Institution: **Our Lady of the Lake University**, Center for Science & Mathematics Education, "Engineering for Educators (E4E)" Program, San Antonio, Texas.

Period: **March 2007 to Present**

Responsibilities: Develop curriculum and teach engineering infused science graduate courses for high school and middle school math and science teachers to help educators introduce engineering principles and engineering applications in their classroom activities. Advise educators in selecting appropriate engineering related materials connected to their subjects and provide help for them to advise students interested in a technical career.

ADJUNCT PROFESSOR

Institution: **University of Texas at San Antonio** – School of Engineering, San Antonio, Texas.

Period: **September 2004 to Present**

Responsibilities: Teaching undergraduate and graduate engineering courses as assigned, advising students in selecting a technical career, volunteered to coach students for Engineering Fundamentals Exam and volunteered to develop joint engineering and research programs between San Antonio College and UTSA.

VICE PRESIDENT/ENGINEERING

Company: **PRISM Enterprises, Inc.**, San Antonio, Texas.

Period: **December 1997 to August 2001**

Prism Enterprises manufactured consumer products, automotive, and medical equipment.

Responsibilities: Managed the engineering department to research, develop and design new products for medical, automotive and consumer product markets involving packaging, plastics injection, thermoforming, and blow molding, metal casting, stamping, welding, and fabricating, fasteners, temperature, vacuum, and pressure sensing devices, hydraulics and pneumatics, etc. Pioneered research and development of force measuring forceps incorporating fiber optic sensors through a technology transfer project from NASA. Tested operating parameters, compliance with FDA, ISO 9000, and CE Mark regulations. Implemented lean manufacturing and DFME concepts. Provided technical assistance in mergers and acquisitions negotiations, product liability lawsuits or litigations, and patenting procedures. **Accomplishments:** Invented and developed several new products (see patents), major contributor to company's ISO 9001 and CE Mark certification. Following a major merger I created and implemented a new company wide part numbering system that was suitable for bar coding, electronic tracking and automated inventory control.

ADJUNCT PROFESSOR

Institution: **San Antonio College** - Physics, Engineering, and Architecture Department
San Antonio, Texas.

Period: **September 1995 to August 2001**

Responsibilities: Teaching Mechanical Engineering evening classes such as Statics, Dynamics, and other Engineering introductory courses and advising students in selecting a technical career.

SENIOR DESIGN ENGINEER/PROJECT MANAGER

Company: **Kinetic Concepts, Inc.**, San Antonio, Texas.

Period: **August 1993 to December 1997**

Kinetic Concepts, Inc. is a large multinational manufacturer of medical equipment with over 3000 employees.

Responsibilities: Project management, research, design and development of electromechanical medical equipment for kinetic therapy, contact pressure relief, patient monitoring and automated data acquisition and analysis. This covered product research, conception, design, development, prototyping, testing and evaluation, selection of manufacturing processes, standards, product safety analysis, and cost estimation. Projects involved hydraulics, pneumatics, electronics, and a large array of sensors and transducers for temperature, pressure, vacuum, humidity, angle, force, acceleration, flow, contact, light, and position. Conducted several patient surveys and focus groups regarding the quality of our products to comply with FDA requirements. **Accomplishments:** Invented and developed several new products, among them TriaDyne, at the time the most advanced kinetic therapy equipment on the market that incorporated a sliding/rotating mechanism imitating the natural movements of the human body. Contributed to company's ISO 9001 and CE Mark certifications. Author and co-author of several patents.

LECTURER/RESEARCHER

Institution: **North Dakota State University** - Mechanical Engineering Dept., Fargo, North Dakota.

Period: **September 1989 to May 1993**

North Dakota State University is the largest university in North Dakota's educational system.

Responsibilities: Lecturer for a variety of mechanical engineering courses, labs, and seminars such as Statics, Dynamics, Machine Design, Engineering Graphics, Strength of Materials, Descriptive Geometry, and, also, worked as principal researcher and project manager in the Internal Combustion Engines Laboratory. Conducted independent research in internal combustion Diesel engines using petroleum and alternative fuels as part of an externally funded research project. Researched and developed a new apparatus and a new electro-optical method to study pre-combustion events and energy release during diesel combustion of standard and various alternative fuels. Managed a team of several undergraduate students to design and build the equipment and to conduct the research activities needed for our study. Co-authored four SAE technical papers presenting our revolutionary combustion chamber, our experiments, and reporting our findings on petroleum and alternative Diesel fuels. **Accomplishments:** The device allowed, for the first time in history, direct observation of a combustion event simultaneously in visible light and infrared radiation. The state-of-the-art optical elements allowed us to observe some new phenomena never seen before in combustion chambers. The Engineering Meeting Board considered the study as an important contribution to Combustion Science and the paper presenting it (SAE #901617) was approved for publication in its 1990 TRANSACTIONS.

DIRECTOR OF ENGINEERING

Company: **Dynamic Industries, Inc.**, Barnesville, Minnesota.

Period: **June 1985 to July 1989**

Dynamic Industries was a 14 Million construction equipment manufacturing company until it was sold and merged with Continental Diversified Inc., from Minneapolis, Minnesota.

Responsibilities: Managed the engineering department to design and develop new machines, hydraulic equipment, customized attachments, and adapt new components. Assisted customers in selecting proper equipment and attachments for specific applications. Tested operating parameters and verified compliance with safety standards. Provided project management, Research and Development strategic planning and technical assistance in mergers and acquisitions negotiations, product liability lawsuits and litigations, and patenting procedures. Co-authored three SAE technical papers presenting some unique aspects of our designs. **Accomplishments:** Invented and improved material handling devices and heavy construction equipment such as: Loaders, Forklifts, and Reach Trucks (see patents and published SAE Technical Papers).

LECTURER

Institution: **North Dakota State University** - Mechanical Engineering Dept, Fargo, North Dakota.

Period: **August 1982 to May 1987**

Responsibilities: Teaching various Mechanical Engineering courses as assigned and advising students in selecting coursework for a suitable technical career.

TRAIKIRCHEN REFUGEE CAMP, Austria

March 1982 to August 1982

IMPORT/EXPORT MANAGER

Company: **Industrialexportimport**, Bucharest, Romania.

Period: **January 1980 to March 1982**

Industrialexportimport was the national Foreign Trade Company in Romania specialized in import/export of surface and underground mining equipment, know-how, and technology.

Responsibilities: Managed the group specialized in import/export of surface and underground mining equipment, know-how, and technology. Determined the marketing strategy, proposal development, pricing and forecasting, bidding and contracting strategies, budgeting and planning, supervised bank transfers and payments, currency exchanges, and countertrading support. I also supervised conversion of industry standards between internal and external markets and facilitated the development of joint ventures between foreign and Romanian partners involving import and export of equipment, technology, and know-how, by providing technical assistance and market research for the national mining industry (western market, heavy equipment division).

Accomplishments: Provided technical advice and closed contracts worth over \$70M for the Romanian national mining industry with various partners from Western Hemisphere.

IMPORT/EXPORT NEGOTIATOR

Company: **Romchim**, Bucharest, Romania.

Period: **June 1978 to January 1980**

Romchim was the Romanian national Foreign Trade Company specialized in import/export of equipment, know-how, and technology for organic and inorganic chemical industry.

Responsibilities: Import/export of equipment, know-how, and technology for the chemical industry. Involved in marketing and market research, strategic planning, contracting, licensing, payments, billing and currency exchange, technical supervision, and countertrading support for the national chemical and pharmaceutical industry (western market, laboratory and production equipment division). I specialized in import, export, and licensing of new technologies.

Accomplishments: Provided technical advice and closed contracts worth over \$30M for the Romanian national chemical industry with various partners from Western Hemisphere.

LECTURER

Institution: **Industrial College #4 "Semanatoarea"**, Bucharest, Romania.

Period: **December 1973 to June 1978**

"Semanatoarea" was a small industrial college in Bucharest offering associate degrees and certificates in applied engineering and technology fields. It was sponsored and supported by the industrial complex "Semanatoarea" the largest manufacturer of agricultural equipment in Romania at the time.

Responsibilities: Teaching various Mechanical Engineering evening classes such as Statics, Dynamics, Theory of Mechanisms, Engineering Graphics, Drafting, Strength of Materials, Descriptive Geometry, Fluid Mechanics, Internal Combustion Engines, etc. as assigned and advising students in selecting a suitable career.

SENIOR DESIGN ENGINEER / PROJECT MANAGER

Company: **Iprochim**, Bucharest, Romania.

Period: **September 1970 to June 1978**

Iprochim was the Romanian national institute for technological engineering, design, and projects for chemical industry.

Responsibilities: During this period I held various positions with increasing responsibilities from team project engineer to project manager, designing complete chemical plants and equipment for inorganic and organic chemical industries, including oil industry. I was involved in project conception and strategic planning, research, design and development, budgeting, implementation, project management, on-site technical assistance and assisted in general contracting operations. Responsible for project standardization, safety and technical training, testing operating parameters, and cost analysis. **Accomplishments:** Several projects have been exported as turn key operations in Turkey, Iran, Egypt, Bulgaria, and Soviet Union. Committee member and major contributor in establishing a national standardization for chemical fluid storage facilities.

PUBLICATIONS AND PATENTS (Author or Co-author)

Theses and Dissertation

1. Dan G. Dimitriu, “**Development of an Infrared/Visible Radiation Method for Ignition Delay Measurements and Premixed Combustion Analysis**”, Ph.D. Dissertation, Department of Mechanical Engineering, College of Engineering and Architecture, North Dakota State University, Fargo, ND, December 1992.
2. Dan G. Dimitriu, “**Analysis of Technology Import for Oxygen/Hydrogen Plants**”, Masters Thesis, Department of International Economic Relations, Academy of Economic Sciences, Bucharest, Romania, September 1979.
3. Dan G. Dimitriu, “**Design and Related Manufacturing Considerations of a 100 MW Steam Turbine**”, Masters Thesis, Department of Mechanical Engineering, Polytechnic Institute of Bucharest, Bucharest, Romania, June 1970.

Books

A, B, See...in 3D, Morgan & Claypool Publishers, 2015

Technical Papers Published and Presented at Conferences:

Society of Automotive Engineers Technical Papers:

932477 - Apparatus for Premixed Combustion Analysis

932478 - A Study of Energy Released During Premixed Combustion

910847 - Development of an Infrared Method for Ignition Delay Measurements

901617 - Apparatus for the Measurement of Ignition Delay Times for Diesel Engine Fuels
(Selected for publication in 1990 S.A.E. Transactions)

881262 - TITAN HL, A New Loader with a Higher Reach

871651 - 5480 Reach Truck, a New Concept in Reach Truck Design

871652 - Self-leveling Device for Three-Bar Linkage Mechanism Used in Industrial Equipment

American Society of Engineering Educators Papers:

- 2016-14442 – The Making of a Technology Literacy Course
2016-14443 – A New Way to Help Students Improve 3-D Visualization
2016-14746 – The Re-Energize Undergraduate Research Program at Our Community College
2015-11110– EDGE 2014 Program – The Formula that Works
2014-8446 – EDGE 2013 Program – A Redesign Work in Progress
2013-6081 – The Five Years Evolution of a *MESA* Program
2012-2990 - Initiation of an Undergraduate Research Program
2012-4249 - E 4 E: Engineering for Educators
2011-100 - A Service Learning Project for a Freshman Engineering Course
2010-1628 – Community Colleges Can Help Universities During ABET Accreditation Efforts
2009-1514 - *EDGE 2008* Program – The First Signs of Maturity
2008-253 - The Fifth Year of the *EDGE* Program – A New Beginning
2008-255 – Introduction of Service Learning in a Freshman Engineering Course
2007-247 - The evolution of the *EDGE* Program in its Fourth Year
2007-248 - The Need for a Quality Control System for Community College Engineering Education
2006-139 - The *EDGE* Summer Program in its Third Year
2006-253 - The Advantages of Starting an Engineering Education at a Community College
2005-229 - A Strategy for Success: The *EDGE* Program in the Second Year
2005-2339 - Exploring the Engineering Profession-A Freshman Engineering Course
2004-676 - Forging Stronger Ties between Community Colleges and Four Year Universities
2004-1266 - Getting an *EDGE* in engineering education

American Mathematical Association of Two-Year Colleges Paper

- 2005 - "ACCESS: Advancing Community College Engineering Student's Success"

Community College National Center for Community Engagement

- 16th National Conference, May 2007 - "Service Learning in a Freshman Engineering Course"

San Antonio Science and Mathematics Education Association Conference at San Antonio College

- 2007 - "E4E - Engineering for Educators" presentation

- 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, and 2015 "Road to Success" Conferences in San Antonio, Texas:** – Presenter of "Engineering Profession – The Best Career Choice"

National Academies Press

2005 - Enhancing the Community College Pathway to Engineering Careers (*Committee member of the study funded by N.S.F.*)

U. S. PATENTS:

7,418,751 - Positional feedback system for medical mattress systems

Abstract: An apparatus adjusts the pressures of a therapeutic mattress surface in accordance with the angular position of that surface. The apparatus comprises an angular position sensor and a rotation sensor which are housed together in an enclosure having a top surface in the form of a circular plate. The circular plate mounts either on the surface of the mattress or on the bottom of a bed frame supporting the mattress. The angular position and rotation sensors measure the horizontal plane referenced perpendicular to the direction of the force of gravity. The apparatus further comprises a controller blower valve assembly which processes data received from the angular position and rotation sensors to maintain, increase, or decrease the pressures within the mattress.

7,346,945 - Bariatric treatment system and related methods

Abstract: The invention relates to bariatric patient beds having apparatus and methods for monitoring and/or controlling therapeutic mattress systems and the patients supported thereon and, more particularly, to such bariatric beds having features for facilitating the care, support and comfort of the bariatric patient through monitoring of angular deviations of the mattress surface and patient from the flat, horizontal position and control of the mattress system in response thereto.

6,904,631 - Bariatric treatment system and related methods

Abstract: A bariatric treatment system providing a comprehensive array of therapeutic services for the morbidly obese patient is disclosed. The treatment system generally comprises a stable bed frame upon which is mounted a low air loss therapeutic mattress system. Integrated hardware and software controls provide such therapies as pulsation, percussion, rotation, cardiac chair and Trendelenburg. Means are disclosed whereby the bariatric patient may safely and comfortably enter and exit the bed.

6,892,405 - Therapeutic bed and related apparatus and methods

Abstract: A therapeutic mattress system and bed are disclosed for providing a comprehensive system of pulmonary and skin care therapies for the critically ill, immobilized patient. The features provided include rotational therapy, percussion therapy and pulsation therapy on a critical care bed frame with a low air loss patient support, all of which are controlled with various types of feedback from particularized sensors in the bed.

6,536,056 - Bariatric treatment system and related methods

Abstract: A bariatric treatment system providing a comprehensive array of therapeutic services for the morbidly obese patient is disclosed. The treatment system generally comprises a stable bed frame upon which is mounted a low air loss therapeutic mattress system. Integrated hardware and software controls provide such therapies as pulsation, percussion, rotation, cardiac chair and Trendelenburg. Means are disclosed whereby the bariatric patient may safely and comfortably enter and exit the bed with relative ease. The bed is adaptable for transport within a hospital,

including such features as a TRANSPORT MODE wherein the bed's lateral axis is minimized and battery backup to maintain necessary therapies during patient transport. A plurality of control means is disclosed for simplification of caregiver workload and ease of patient utilization.

6,361,542 - Obstetrical vacuum extractor cup with force measuring capabilities

Abstract: An optical strain gauge is coupled to an obstetrical vacuum extractor to measure the tensile strain resulting from the application of an extraction force. The measured strain is transmitted to a readout device and converted to a readable indication of the force applied. The optical strain gauge may be of any suitable design, so long as the measured reading may be transmitted and converted to a readable indication of the applied force either before or at the readout device. Preferably, the strain gauge is connected with an optical fiber to the readout device. The strain gauge may be coupled to or molded to any portion of the extractor that exhibits a tensile or compressive force or bending as a result of the application of the extraction force.

5,968,055 - Amniotic membrane perforator

Abstract: An amniotic membrane perforator comprising an elongated shaft portion having an arcuate bend at the proximal end of the shaft and a hook at the distal end of the shaft. A flag portion extends perpendicularly to the shaft substantially adjacent the distal end of the shaft, opposite the hook. The cross-section of an extended length of the shaft inward the distal end is substantially oval. During use, the physician's index finger is placed along the flat portion, and the thumb and second finger adjacent the oval cross-section portion.

5,957,931 - Obstetrical vacuum extractor cup

Abstract: An obstetrical vacuum extractor comprising a vacuum cup to which a disk assembly and attached traction cord are rotatably coupled. The cup has a protrusion extending from its base, and the disk assembly a bore for receiving the protrusion. The protrusion is then preferably ultrasonically welded to create a button to rotatably retain the disk assembly on the cup.

4,775,288 - High-lift loader

Abstract: A self-propelled, low-profile, high-lift loader having the ability to lift loads higher above grade and lower below grade than previous such loaders of the same size category. The loader includes a main frame and a boom support frame pivotally connected at one end to the main frame. Power means are provided for elevating the opposite end with respect to the main frame. A boom butt is connected to the movable or free end of the boom support frame. The boom is pivotally rotatable about a horizontal axis on the boom support frame. Elevation of the boom support frame elevates the butt of the boom so as to extend the reach of the boom, as well as position the boom butt in an orientation permitting the boom to be extended downwardly to a below-grade location.

4,465,280 - Maze board game

Abstract: A maze game is provided which includes individual pieces that may be placed upon a game board, and markers that are moved along grooves formed in the upper surfaces of the individual pieces. The grooves of the individual pieces may be provided with gates extending across the grooves, the gates being pivotable within an intersection of grooves in a manner not determinable in advance by a moving player.

Two patents are presently pending

GRANTS

#	Grant/Funding Source	Partner Institution	Description/Function	Start Date	End Date	PI/Co-PI	Grant Amount
1	NSF Discretionary Engineering Education		Improvement of curricula in math, science engineering and technology	07/01/01	06/30/04	Dan Dimitriu	\$326,000
2	NSF Computer Science, Engr, and Math Scholarships (CSEMS)		Student scholarships in Science, Math	08/01/01	07/30/05	Dimitriu, Psencik, Krueger	\$400,000
3	DoEd		MSEIP 1	10/01/05	09/30/08	Dimitriu	\$263,581
4	NSF		S-STEM Scholarships	07/01/08	06/30/12	Dimitriu	\$551,994
5	NSF (CCLI)	Wright State University	A National Model for Engineering Mathematics Education	08/01/08	07/31/11	Klingbeil, Dimitriu, et al.	\$67,050
6	DoEd		CCRAA STEM Title V - Math & MESA Centers	10/01/08	09/30/11	B. Knotts, Dimitriu	\$2,380,246
7	DoEd		MSEIP 2	10/01/10	09/30/13	Dimitriu	\$557,645
8	NASA	UTSA	Lift-Off: Curriculum Improvement for Enhancing Engineering Education	05/01/10	04/30/13	Hatim Sharif, Dimitriu	\$409,001
9	NASA	UTSA	Climate Change Communication: Engineering, Environmental Science, and Education	09/01/11	02/28/14	Hatim Sharif, Dimitriu, et al.	\$501,814

OTHER RELEVANT ACTIVITIES

- **Consulting** activities for local companies in San Antonio area from 2002 to present covering engineering subjects.
- **Contract reviewer** of Engineering textbooks and standardized tests.
- **Tax advisor** with H & R Block, December 1995 – April 1996.
- **Consulting** activities and seminars for local companies and associations from the area of Fargo/Moorhead covering international business and/or engineering subjects during the 1982 to 1993 period.
- **Expert witness** for several traffic and work related accident reconstruction cases.
- **Editor** of Science and Technology page for the Romanian language weekly magazine “*Lumea Libera*” (“*Free World*”), New York, U.S.A., between December, 1988 and August 1991.
- **Translator** (Part time) for English, French, and Italian languages at the Ministry of Foreign Trade, Bucharest, Romania, from 1979 to 1982 and Traiskirchen Refugee Camp, Traiskirchen, Austria, 1982.