



Curriculum Vitae

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Executive Summary: Professional Experience

Served as a faculty member and administrator with four different institutions and states. Each institution had its unique character and features, including the geographic setting, academic classification, and the diversity of the faculty, staff, and student body. Over my career in higher education, I have been an innovative, entrepreneurial, and caring leader. I have led by example, built collaborative bridges, and aimed to leave a positive mark on the culture of each institution. Details of my work and achievements can be found all over the Curriculum Vitae, with *important highlights below*.

Colorado State University Pueblo

Colorado State University Pueblo (CSU Pueblo) A regional comprehensive, Hispanic Serving Institution in Southern Colorado and part of the Colorado State University System. Its Carnegie Classification is Master's Colleges & Universities: Medium Programs.

June 2018– Current: Provost and Executive Vice President for Academic Affairs

Serving as Provost and Executive Vice President of Academic Affairs in charge of academic colleges, library and academic resources, Information Technology, and division of extended studies with a budget of over \$30 Million.

- **Providing leadership** across the institution with three Wildly Important Goals (WIGs): Enhancing Our Appeal, Student Success, and Developing our people. Implementing Vision 2028 to become the people university of the Southwest United States.
- **Leading efforts to restructure Academic Affairs** to create [College of STEM](#) and Schools of [Health and Human Movement](#), [Education](#) and [Nursing](#), [School of Creativity and Practice](#), and the [Center of Integrated Health and Human Inquiry](#) fostering collaborations between health, humanities, and social sciences as well as other disciplines including Business and STEM.
- **Fostering collaborations** leading to an increase in external funding to over \$12 Million in FY 2022 from various agencies, including the US Department of Education, the National Science Foundation, the National Endowment for Humanities, and the US Department of Agriculture, with a focus on **experiential learning and enhancing student success**. This represented more than a 100% increase from FY 21.
- **Supporting faculty development** efforts through developing a faculty academy and opportunities for professional development through a redesigned [Center for Teaching and Learning](#).
- **Managing [Regional Accreditation](#)** efforts at the institutional level for midterm review that led to meeting **100% of all HLC criteria**, while working with Colleges for the specialized accreditation of Graduate and Undergraduate programs in Nursing (ACEN), Social Work (CSWE), Engineering (ABET) and Business (AACSB).
- **Expanding program offerings** through **offsite locations** in Colorado Springs, Collaboration Campus in Castlerock and Fort Carson Military Base, and the online offering of graduate and undergraduate programs through the Division of Extended Studies (400+% increase in Online Credit Hours since Fall 2018). **Graduate enrollment increased by 100% from Fall 18 to Fall 21.**
- **Increasing collaboration** with community colleges throughout Southern Colorado with innovative [2+2](#) and [4+1 programs articulation agreements](#).
- **Leading** the development of **new innovative academic** programs to broaden the university's reach. New programs include **Doctorate** of Nursing Practice, Master of Social Work, Master of Nurse Manager and Leader, Master of Education (Online), BS in Cannabis Biology and Chemistry, **Bachelor of Applied Science (BAS)** degrees in [Health Sciences](#), [Leadership and Management](#), and undergraduate and graduate Certificates.
- **Recently approved degrees** by the Colorado Department of Higher Education include an **online** Doctorate of Education in Leadership, a Master of Engineering Management, and Jake Jobs Certificate for Entrepreneurship.
- **Supporting** community engagement and securing partnerships with external entities such as [Parkview medical center](#), [ENSCO \(Transportation Technology Center\)](#), and a [Consortium of Research Institutions](#). Most recently, CSU Pueblo received \$17 Million in state funding to upgrade the Technology Building housing programs for Engineering, Technology, Education, and Automotive Industry Management.

Arkansas Tech University

Arkansas Tech University (ATU) is a comprehensive public higher education institution. It serves a rural area in Arkansas. Its Carnegie Classification is Master's Colleges & Universities: Larger Programs.

June 2016 – June 2018: Vice President for Academic Affairs

Served as [Vice President of Academic Affairs](#) and Chief Academic Officer with responsibilities that spanned supervising five academic colleges, Information Technology, and various units to facilitate student success.

- **Created Office** of Research and Sponsored Programs and Office of Student Success.
- **Focused on revitalizing the curriculum** by creating innovative new graduate and undergraduate programs, including [Master of Business Administration](#), Bachelors in [Cybersecurity](#), [Computer Engineering](#), K12 Literacy, and Criminal Justice and Criminology.
- **Collaborated** with the Math department on the restructuring of mathematics remedial education.
- **Increased enrollment** in graduate programs and improved student retention.
- **Initiated the policy** of offering of Associate Degrees in AY 16/17 for students along their pathway towards a 4-year degree, which resulted in a substantial increase in [credentials awarded](#) in the following years (# total degrees awarded increased by **12% in AY 17/18** and more than **40% by AY 18/19**). This also increased the 4-year graduation rate and positively impacted formula funding.
- **Led the efforts** that resulted in the submission of the [winning proposal](#) in February 2018 for ATU to host the statewide Governor's school after 38 years of being hosted by Hendrix College. Decision was made in September 2018.

Texas A&M University-Kingsville

Texas A&M University-Kingsville (TAMUK) is a Hispanic Serving Institution that serves an economically underserved area in South Texas. It is classified as a Doctoral University with High Research Activity.

November 2011 – June 2016: Associate Vice President for Research and Dean of Graduate Studies,

Served as the Chief Research Officer and Graduate Dean in charge of pre-award, post-award, and proposal development offices and responsible for ensuring quality graduate programs, developing new programs responsive to needs of the society, and managing graduate enrollment, diversity, recruitment, and growth.

- **Facilitated** research programs' growth and managed research compliance committees.
- **Fostered** an increase in research funding by **28% in 3 years**, increasing funding breadth across campus.
- **Supported** initiatives for shared governance through **faculty-led research groups** with seed funding.
- **Promoted** policies and collaborative initiatives that increased **graduate enrollment by over 100%**, the university saw a substantial increase in Biennium **formula funding** and received a 34% increase in funding for the next biennium cycle (The average increase was ~8% among all other schools).
- **Fostered** efforts to develop and obtain an Interdisciplinary Ph.D. in Sustainable Energy Systems Engineering.
- **Supported** student success through funded efforts focused on recruitment, retention, and success of undergraduate students.

August 2010 – August 2012: Associate Dean of Engineering

In charge of all matters related to research and graduate studies at the college level, including proposals review and approval, budgeting for research development, and working with college graduate council and research council to promote quality graduate and undergraduate education, scholarship, and funded research activities.

- **Worked** closely with the dean on matters related to faculty recruitment, continuation, and tenure and promotion.
- **Collaborated** with the faculty to *revitalize graduate engineering programs*
- **Introduced** strategic programs and obtained funding to support success, retention, and recruitment of undergraduate students,
- **Broadened** research breadth within the college with funding from various federal agencies.
- **Initiated** collaborative efforts for a new Ph.D. program in Sustainable Energy Systems Engineering.

Tennessee Technological University

Tennessee Tech University (TTU), a Doctoral University with High Research Activity serving a rural and economically underserved region in middle Tennessee.

January 1997 – August 2010: Assistant/Associate/Full Professor,

As a faculty member, I focused on the integration of research, education, and community engagement through the pursuit of collaborations with other faculty from various departments and with different expertise to:

- **Led** large-scale interdisciplinary research problems in industrial settings.
- **Engaged** undergraduate and graduate students and K-12 Teachers in meaningful research experiences.

- **Improved** teaching through funded educational projects, outreach and engaging the K12 community through innovative STEM initiatives.
- **Built** interdisciplinary collaborations across campus, leading to \$8+ Million in external funding, 100+ publications, three patents, and several awards.

Executive Summary: Leadership Qualities

Collaborative leadership through shared governance

Built collaborative bridges across campus and other institutions to create a meaningful change that impacts the students and my colleagues (faculty and staff).

- @ **CSU Pueblo: Guided the renovation** of a legacy building to accommodate the School of Nursing and Health Sciences and departments from Humanities and Social Sciences, overcoming strains, creating consensus, lifting the morale of faculty, and creating the Center for Integrated Health and Human Inquiry (CIHHI) as a model for interdisciplinary collaboration.
- @ **CSU Pueblo: Fostered** the creation of the [School of Creativity and Practice](#) with departments of Music, Media Communications, and Art and Creative Media maintaining the individuality of programs while allowing for innovations including shared curricula and students' experiences within the School.
- @ **ATU: Initiated and coordinated** the efforts to write the [winning proposal](#) to host the statewide Governor's School for high school students. The school was hosted by Hendrix College for 38 years.
- @ **ATU: Steered the creation** of [new academic programs](#), including a [BS in Cybersecurity](#), a [BAS in Leadership](#) in collaboration with the Ozark Technical campus, a BS in computer engineering, a BA in criminal justice and criminology, and a Master of Education degree in K-12 literacy.
- @ **TAMUK: Led collaboratively** with Enrollment Management and Finance initiatives that led to **doubling the graduate enrollment** over the period I served as Graduate Dean. TAMUK was named the [fastest growing Doctoral University](#) in the country in 2015.
- @ **TAMUK: Built relationships** across the Texas A&M system to revitalize the research environment at TAMUK. Research expenditures increased by 28% to \$20 Million.
- @ **TTU: Led large-scale** multi-institution research and outreach projects that aimed to enhance the [metal casting industry](#) and improving the [image of manufacturing](#) to attract a skilled workforce. This included working with colleagues from the College of Education and [K-12 teachers](#) in Tennessee and Texas rural areas.
- @ **CSU Pueblo: Managed with the HLC Liaison** campus-wide preparations for an HLC visit under COVID restrictions, **CSU Pueblo met, without concerns, 100% of the accreditation criteria.**

Community engagement and addressing regional Issues

- **Engaging community by** fostering meaningful partnerships with entities in the region, including [Pueblo County](#), [Parkview medical center](#), [Community Colleges](#), [CSU Fort Collins](#), and a [Consortium of Research Institutions](#).
- **Aligning university focus** and interest with those of interest to the region through active participation in initiatives including [Pueblo Food Project](#), [addressing nursing shortage](#), and supporting unbiased research and education in the Cannabis industry through [the Institute of Cannabis Research](#) and [innovative academic programs](#).
- **Partnered** with ENSCO, a private company that won a [\\$571 Million contract](#) with the US Department of Transportation to run the Transportation Technology Center in Pueblo. CSU Pueblo is part of a consortium of eight universities that focuses on [Surface Transportation](#).
- Most recently, **with proper advocacy**, CSU Pueblo received [\\$17 Million in state funding](#) to upgrade the Technology Building housing programs for Engineering, Technology, Education, and Automotive Industry Management.

Entrepreneurial, fiscal, and financial management skills

Utilized understanding of formula funding for academic programs and opportunities for funding from Federal, state, and private sources to attract resources and support institutional initiatives.

- @ **CSU Pueblo: Partnering** with VP for Enrollment Management and Dean of Extended Studies to develop [collaborative marketing](#) and [scholarship plans](#) to support new programs and diversify enrollment streams.
- @ **CSU Pueblo: Partnering** with academic leaders and faculty governance groups to create innovative pathways for student success, including new **online completion** programs, new programs to attract transfer students from Community Colleges (CC), and **new interdisciplinary** academic programs.
- @ **CSU Pueblo: Managing** budget of over \$30 Million, focusing on efficient delivery of curriculum, optimally allocating resources to support areas of growth, and leveraging
- @ **ATU: Originated**, working with administrative offices including the registrar's office, a pathway for stacking degrees, allowing students to earn intermediate credentials while pursuing their Bachelor degrees. Stacking credentials supported student success and **substantially increased** [overall credentials](#) awarded.
- @ **CSU Pueblo, ATU, and TAMUK: Nurtured** a mentoring and supportive environment for faculty and staff to pursue **external funding** with a focus on opportunities for Hispanic Serving Institutions. CSU Pueblo external funding doubled in FY 22 to reach \$12 Million. This has resulted in a substantial increase in resources to support student success, experiential learning, and [partnerships with Community Colleges](#).
- @ **TAMUK: Collaborated** with Academic Deans, Senior VP for Student Affairs, Finance and Administration, and VP for Enrollment Management to manage formula funding increase through merit scholarships, summer scholarships, and partnerships to attract [graduate students to TAMUK](#). This resulted during the period 2011-2015 in doubling the graduate enrollment at TAMUK and [a substantial increase in formula funding](#).
- @ **All Institutions: Managing large complex budgets** over my entire career, starting as a project director on major national grants and progressing to Graduate Dean and Chief Research Officer, Chief Academic Officer, and Provost to achieve the mission while reducing expenses and increasing revenues.

Advocacy for Equity, Interpersonal and Communication Skills

*I genuinely care about **equity at all levels** for those who I work with and the student population we aim to serve. I translate that into passionate advocacy for faculty, staff, and students at various levels.*

- @ **CSU Pueblo & ATU: Advocated** successfully for a pathway for promotion for [lecturers](#), working with the faculty senate and cabinet at both Arkansas Tech University and CSU Pueblo.
- @ **CSU Pueblo: Obtained** over \$2 Million in **CSU System Funding** to support [student success and close the equity gap](#) for different groups of students, including Underrepresented Minorities and Rural Students.
- @ **CSU Pueblo & ATU: Introduced** [Academic Newsletters](#) and convocations' [academic sessions](#) to keep the university community aware of issues and achievements.
- @ **CSU Pueblo & TAMUK: Supported and fostered** programs seeking [federal funding for Hispanic Serving Institutions](#) from various federal agencies to support [minority students](#). These resulted in millions of dollars to enhance equity for these students.
- @ **CSU Pueblo: Collaborated** with School of Nursing leadership to obtain funding from a local Hospital to address nursing shortages by recruiting students from [rural underserved areas](#) in Colorado.
- @ **CSU Pueblo & TAMUK: Formed** a group to focus on supporting [female faculty in STEM](#) and seeking funding from [NSF Advance program](#).
- @ **TAMUK: Advocated** successfully with the upper administration and the Texas Higher Education Coordinating Board (THECB) for the creation of a Ph.D. in [Sustainable Energy Systems Engineering \(SESE\)](#).
- @ **TTU: Successfully created** a national-level [collaborative](#) research program focused on [Manufacturing](#) at a time when manufacturing was struggling.
- @ **All Institutions: Participated** in [outreach and dissemination activities](#), including presentations at national and regional conferences about activities to [engage students](#) and [support minority students](#).
- @ **All Institutions: Mentored** colleagues and **fostered** environments conducive to success in research and curriculum development to support community needs. Most recent are programs supporting [Food security](#), [Nursing](#) and [Health Sciences](#), [At-risk Youth](#), and [Cybersecurity](#).

Leadership at a Time of Uncertainty

The pandemic has been a test that has required leadership and decision-making with incomplete information and uncertainty. It continues to challenge us in higher education to a different type of thinking and offers opportunities for transformational changes. The innovative and collaborative nature of CSU Pueblo's response to the pandemic was recognized by the American Association of State Colleges and Universities (AASCU) with [Excellence and Innovation Award for Campus Pandemic Response](#) in 2021. Highlights of my leadership across campus during the pandemic include:

- **Developing and maintaining** academic contingency plans to address potential emergencies.

- **Collaborating** with the President, cabinet members, academic deans, faculty senate, IT division, COVID-19 task force, and Associated Student Government to continue to address safety challenges and offer flexible and responsive academic instruction in the COVID environment.
- **Identifying and securing** the technology and faculty development needed for online and hybrid instructions and balancing safety, flexibility, and accessibility.
- **Working with CSU System**, Colorado Department of Higher Education officials, cabinet members, faculty, and staff to identify and secure technology resources and [online support services](#) for underserved students to access online and hybrid classes.
- **Coordinating** with academic deans and department chairs to design and offer a blended instruction model that offers flexibility and options for students to take classes online, on-campus, or in a hybrid model based on their particular circumstances.
- **Communicating clearly** and in a timely manner to [students](#), [faculty](#), staff, and community regarding academic plans and changes that impact academic offerings. This included communications through emails, [videos](#), [newsletters](#), presentations during [convocation](#), and in collaboration with the [Associated Students Government](#).
- **Fostering a proactive and supportive** environment with planning for the future and attracting external funds to support these plans.

Educational Qualifications

Ph.D. in Nuclear Science and Engineering, [Idaho State University](#), Pocatello, ID, 1996. Dissertation Title: Model Motivated **Advanced Control Strategies** for Nuclear Reactors.

MS in Measurements & Controls Engineering, [Idaho State University](#), Pocatello, ID, 1994. Thesis Title: Neural Network Technology for Environmental Surveillance.

MS in Engineering Physics, Faculty of Engineering, [Cairo University](#), Egypt, 1992. Thesis Title: Analytical and Applied Studies of Visual Performance Models.

BS with **High Honors** in Electronics and Telecommunications Engineering, [Cairo University](#), Egypt, 1988.

Selected Leadership Professional Development

- National Association for System Heads (NASH) [Leadership Academy](#), Colorado State University System Team, Spring 2021. Project focus: Addressing Rural Colorado Educational Needs (*Equity Framework*).
- American Association of State Colleges and Universities (AASCU) [Student Success Institute for Provosts](#), Spring 2021.
- Unconscious Bias: Understanding Bias to Unleash Potential TM, [FranklinCovey Training](#), Jan 2021.
- [Supervisory Skills Training](#) Workshop offered by HRDQ, Colorado State University Pueblo, Spring 2019.
- Higher Learning Commission (HLC), [Peer Reviewer Training for Regional Accreditation](#), 2017.
- American Council on Education (ACE) [Institute for New Chief Academic Officers](#), 2016.
- [Kingsville Leadership Training](#), Kingsville, TX, Spring 2011.

Detailed Professional Experience

Colorado State University Pueblo

Colorado State University Pueblo is a comprehensive [Hispanic Serving Institution](#) with ~6000 students (~4000 undergraduate students and ~(1800-3000) Graduate & Continuing Education students). CSU Pueblo is regionally accredited by the Higher Learning Commission (HLC). It offers ~ 50 undergraduate and graduate programs through 4 academic colleges and a division of Extended Studies ranging from a Doctorate in Nursing Practice to Master and Bachelor programs in various disciplines. Its Carnegie Classification is Master's Colleges and Universities: Medium Programs.

June 2018 – Current: Provost and Executive Vice President for Academic Affairs,

Serving as the Chief Academic Officer and executive vice president in charge of academic colleges, library, and division of extended studies and providing leadership across campus with three pillars: Student Focus, Collaboration, and Innovation. These pillars are crucial in revitalizing the academic affairs division through reinvigorating existing curricula and supporting new modes of delivery, introducing new innovative programs, increasing student engagement and a renewed support for scholarship, and attracting external resources. All of the achievements were the result of collaborations with other divisions and utilizing a shared governance approach. Some of the achievements include:

Enhancing Student Engagement

Student engagement is the job of each position on campus. The current effort to enhance student engagement is a collaboration between Academic Affairs, Enrollment Management, Student Affairs, and Marketing

- [Cultivated the redesign of developmental education](#) in Math in order to increase the success of students. Students passing their first college math in their first semester almost doubled from 29.5% in Fall 2018 before the redesign to 54% in Fall 2019 and 58% in Fall 2020 after the redesign.
- [Advancing](#) the development of individualized pathways for each student dictated by the academic preparation and work experience as well as future aspirations. Some of the initiatives we are focused on developing are the Discover Scholars supporting experiential research and CSU Pueblo Works, allowing students to engage in internships and work experience throughout their academic journey.
- [Instituted](#) a new position of Executive Director for Undergraduate Studies (EDUS) focused on Student Engagement Activities.

- Facilitated, working with VP for Enrollment Management, the development of a new advising model in collaboration with various divisions to support student success over their entire academic journey while allowing for the variability in demand by various academic disciplines.
- Enabled the revitalizing of General Education by revisiting the student learning outcomes working with the faculty general education committee, different faculty groups, and faculty senate.
- Increased collaboration and coordination among tutoring centers across various academic colleges and introduced online tutoring to support learning during **COVID**.
- Engaged the Associated Student Government and a Faculty working group in decisions regarding academic offering and safety precautions during **COVID**.

Restructuring of academic affairs

The restructuring of academic affairs aimed to increase alignment to market needs, bring synergies, increase efficiency and reduce administrative burden. Efforts on this include:

- The creation of the College of Science, Technology, Engineering and Mathematics (STEM) with the aim of added collaboration and increased opportunities for faculty and students.
- The creation of the School of Creativity and Practice encompassing the department of Arts and Creative Media, Media Communications, and Music with the aim of creating common core experiences within the school at various levels while maintaining individualized Program focus.
- The creation of the College of Health, Education, and Nursing comprised of three semi-independent schools: School of Health Sciences and Human Movement, School of Education, and School of Nursing.
- The overall structure of the reorganization was aimed at highlighting unique programs, increasing marketability while reducing the administrative burden.
- The integration of the Honors and President Leadership Program under the umbrella of the Center for Honors and Leadership (CHL) is an example of operating more efficiently while increasing the value of programs. The new arrangement provides academic and administrative leadership at a lower cost while offering students more opportunities for academic growth and leadership.
- Restructuring the library to enhance its impact on the campus environment. This included the creating of the Aztlan Center dedicated to the study of Chicanx, Latinx, and Indigenous Peoples and Environments of the Southwest and the Learning Innovation Center (LINC), a student-focused center for learning and innovation.

Enhanced Faculty Development

- Introduced a faculty academy during the academic year that provides a forum for the exchange of pedagogical ideas and technological advances.
- Created an office of Research and Sponsored Programs focused on facilitating proposal development and increasing funded scholarship. The office supported increased funding from federal agencies, including the National Science Foundation, the National Endowment for Humanities, the US Department of Agriculture, and the US Department of Education, with increased proposal activity targeting other funding agencies.
- Introduced incentive programs to facilitate increased engagement in research through internal grants for proposal writing during summer.
- Provided training on hybrid and online instruction and development of online courses in response to COVID.

Increased Support for Acquiring External Funding

- Reinstated the office of research and sponsored programs to support grant development and proposal writing.
- Facilitated the development of substantial federal grants to the US Department of Education, National Science Foundation, and other federal agencies.
- Partnered with the CSU Pueblo Foundation to seek and secure private funding from local industry to support academic programs.
- Over the past two years, CSU Pueblo has been very successful in acquiring funding from programs supporting Hispanic Serving Institutions such as Title V and Title III, as well as funding from the National Science Foundation and the US Department of Agriculture.

New Academic Programs that Serve Market Needs

Facilitated the development and implementation of new degrees through collaboration among departments and schools as needed. These included:

- A BS degree in Cannabis Science with support from the Institute of Cannabis Research. This degree received wide national and international attention.
- A Master's degree in Social Work (MSW), which graduated its first cohort in Summer 2020.

- A Doctorate of Nursing Practice. The program had its first graduates in May 2020.
- A Master's degree in Nursing Manager and Leader.
- A Master's degree in Athletic Training.
- Several new programs have been approved by the Colorado Department of Higher Education and are being reviewed by the Higher Learning Commission, including:
 - a. A Doctorate of Education in Leadership
 - b. A Master's degree in Engineering Management
 - c. A Master's degree in Cannabis Biology and Chemistry

Development and Implementation of interdisciplinary “Completion” programs

Completion programs do not require new resources and offer students who have earned credits but are not able to complete a degree a pathway towards completion. Over the past academic year, the following such degrees have been created and started in Fall 2019:

- A BS degree in Health Sciences: This is aimed at retaining pre-nursing students who do not enter the program and providing them a viable pathway towards remaining in the healthcare field.
- A BA degree in Humanities and Social Sciences: This is aimed to be a completion degree for students in the College of Humanities and Social Sciences who have not progressed towards graduation in a particular major.
- A BS degree in Interdisciplinary Studies (Can be earned online): Aimed at adult learners who have earned college credits but have dropped out of college.
- A Bachelor of Applied Science (BAS) in Health Sciences.
- A Bachelor of Applied Science (BAS) in Automotive Industry Management.
- A Bachelor of Applied Science (BAS) in Leadership and Management.

Supporting growth in the online area building on existing strengths

Focused on enhancing the diversity of online offerings with a focus on interdisciplinary collaborations:

- The Division of Extended Studies partnered with the Teacher Education Program and launched the online M.Ed. Program starting Fall 2019. We are using targeted marketing to enroll students who have already earned credits through CSU Pueblo for Continuing Education. This is a significant market with a large growth potential.
- Additionally, a collaboration between Extended Studies and the College of Nursing to offer online programs for nurses has been fruitful. The RN-BSN degree offered online has been successful. We launched the first fully online RN-MS (Nurse Educator) degree as well in fall 2019.
- Efforts to jump-start these programs successfully, including support for graduate admissions, marketing, and financial incentives, are ongoing.
- Online general education courses were very successful in Summer 2019 achieved close to a 100% increase in the number of courses offered. With the development of those courses, departments are moving to include online courses into the faculty load instead of by supplemental pay.
- The Division of Extended Studies is also offering recovery online sections for students who struggle in the early part of the semester and will help academic success and retention.

Increased geographic influence and reach

This is achieved through collaborations with other community colleges and system entities, including:

- Working collaboratively with community colleges, including Pueblo Community College (PCC), Pikes Peak Community College (PPCC), and Arapahoe Community College (ACC). Collaborations featured expanded articulation agreements with PCC and discussions on offering Cyber Security programming with PPCC and ACC.
- Developing collaborative, externally funded programs with community colleges. One successful example is a National Science Foundation-funded \$2.5M grant awarded to CSU Pueblo working with PCC and PPCC focused on Cybersecurity Education.
- Addressing the needs of special populations in Colorado Springs (COS) by expanding the offerings of special programs that address their needs. One of the new programs that will utilize the COS facility will be the new MSW.
- Offering programming through collaborative agreements using the system collaboration campus in Castle Rock.
- The newly established Office of Research and Sponsored Programs is slowly building collaborative bridges with other institutions. These will open doors for faculty and, just as importantly, students to [join research graduate programs at CSU-FC](#) and other research institutions.

Arkansas Tech University

Arkansas Tech University (ATU) is a comprehensive public higher education institution with approximately 12,000 students. ATU is regionally accredited as an institution through the Higher Learning Commission (HLC). It offers programs ranging from a

Doctorate in Educational Leadership to 85 Master and Bachelor programs in various disciplines across five Academic Colleges and offers Associate degrees through its Ozark campus. Its Carnegie Classification is Master's Colleges & Universities: Larger Programs.

June 2016 – May 2018: Vice President for Academic Affairs

Served as the Chief Academic Officer in charge of academic colleges (Arts and Humanities, Business Administration, Education, eTech, Engineering, and Applied Sciences, Natural and Health Sciences and Graduate College), Office of Student Success (Academic Advising, Career Center, Tutoring), Center for Excellence in Teaching and Learning, Registrar, Office of Information Systems, Sponsored Programs and University Initiatives, and Enrollment Management. *One of the achievements that reflect a change in the institutional culture was leading a team that developed and submitted in February 2018 a proposal for Arkansas Tech to host the Governor's school. The proposal won the competition, and Arkansas Tech was selected in September 2018 to host the Governor's School, replacing Hendrix College, which hosted the Governor school for 38 years.*

Focused on Increasing Student Success

- First-year efforts towards student success resulted in an increase in retention rates from **68.6% to 71.3%**, a **~3% increase in first-year retention rate on the Russellville campus.**
- Operationalized the Student Success office by hiring a permanent Assistant Vice President for Student Success, with expanded services in the Tutoring Center and increased participation in Academic Coaching and Praxis Workshops.
- Worked to identify and remove curricular barriers to success with a focus on remedial math. Pilot sections for remedial math as a co-requisite were developed, leading to the implementation of remedial math as a co-requisite starting in fall 2017.
- Increased efforts for filling vacant faculty positions, increasing full-time faculty to 305 in Fall 2017 from 293 in Fall 2015.
- Piloted a scholarship renewal policy modification, based on guidance from the AACRAO consultant that our policies were too strict when compared with other institutions.
- Introduced a summer earn-back program in 2017 to allow freshmen to use summer courses to retain an academic scholarship. The program has resulted in a net increase in revenue while supporting students in maintaining their scholarships.
- Supported academic programs collaboration to increase interdisciplinary service and project-based learning opportunities (micro-shelter competition, climate change interdisciplinary course).
- Academic Affairs funded proposals for course redesign to incorporate undergraduate research and scholarship into the curriculum.
- Supported expanded study abroad efforts by granting a course release to a faculty member to facilitate the growth of the program. The number of study-abroad students increased by 64%, from 31 to 51 students.
- Developed and implemented a new concept for identifying eligible students and awarding Associate Degrees for eligible students upon completion of the requirements using the Degree Works software package.

Revitalization of Curriculum

Worked with deans and department heads to examine existing programs in order to identify short-term and long-term strategic actions to further enhance the curriculum offering at ATU in line with the strategic plan. This included the following main elements:

- Identifying changes in existing programs or coursework to make them more competitive and provide students with better-identified credentials. An example of this works to offer a BA in Criminal Justice which builds almost entirely on existing coursework and gives students interested in the field a more identifiable credential. Moreover, programs with low enrollment are asked to look at venues for improved focus, such as Applied Mathematics.
- New Programs were introduced to fill in gaps in the curriculum and be responsive to the strategic plan and market demand. New programs introduced included:
 - College of Business developed a new online Master of Business Administration (MBA) with a focus on data analytics.
 - College of eTech developed a New Bachelor of Applied Science (BAS) as a completion degree aimed at students from 2-year Technical Schools who finish an Associate of Applied Science Degree.
 - College of Engineering and Applied Science developed a new Bachelor of Science in Cybersecurity that was stackable with certain Associate of Applied Science degrees.
- Enhanced review and quality assurance of existing programs.

Faculty Recruitment and Development

- Addressed recruitment issues that led to a host of unfilled faculty positions through proper advertising and direct involvement in the hiring process. Over an 18-month period, 52 full-time faculty members were recruited in various departments.
- Promoted faculty development and success through the New Faculty Academy (22 new faculty participated in fall 2016 and over 30 in fall 2017).
- Facilitated the development of an online Adjunct Instructor Academy. The **academy for adjunct faculty** started in Fall 2017 and aimed at raising the level of awareness of adjunct faculty of services available to support student success and teaching excellence.
- Facilitated the development of an **online advising course** for faculty members.
- Establish and staff the **Office of Sponsored Programs and University (SPUI) Initiatives**. SPUI supports the development of sponsored programs to support scholarship, student success, and pedagogical research.
- Started a summer initiative aimed at supporting faculty proposal writing with an emphasis on pedagogical and research proposals.
- Worked with academic departments and IR to develop a **Strategic Accountability Matrix (SAM)** to allow for measuring progress on key metrics such as retention and graduation for individual programs.

Student Career Awareness

- Norman Career Services increased business and industry employer representation at all targeted career fairs, including educators, STEM, agriculture, food, and natural resources, and nursing. A new software, Handshake, was used to increase employer visibility and allow direct contact between industry and ATU students and alumni. It also expanded functionality for on-campus job searches and postings.
- Academic Affairs worked with Marketing and Communications to develop an Academic Internship for students in Journalism and Communication.
- Athletics and the Communication and Journalism department have combined resources to purchase a mobile production trailer for the institution. It will be used to support student training and local internships in appropriate disciplines.

Enrollment Management

Supported Undergraduate Enrollment through:

- Led efforts to completely **redesign the online application** user interface through internal efforts by **the Office of Information Systems (OIS)**. The project was completed in record time with internal resources and has led to a drastic improvement in user experience. It required collaboration among several departments, including admissions on both ATU campuses with the OIS staff.
- Advocated for a **new scholarship model** that focuses on **net revenue** instead of expenditures. This model led to a new scholarship for non-traditional students for a new online program targeting students applying to the newly developed program Bachelor of Applied Science; a completion degree for those who have an Associate of Applied Science.
- Increased efforts for recruiting concurrent students through increased communication with the students, providing high school concurrent students with an ATU **ID card**, and a **streamlined process for admission** to the university for seniors who are concurrent students.
- Increased collaboration with community colleges through umbrella MOUs to establish 2+2 programs.
- Started discussions with high schools to create **4+3 programs for concurrent high school students** so that students are given a model to finish college in 3 years.

Supported Growth of Graduate Programs through:

- Financial support to attract students into STEM and other programs that are of special value to the region and state. An **out-of-state waiver** program for such **high-impact programs** was introduced.
- **Restructuring** of the **graduate program in engineering**, which has been semi-inactive, was completed in the spring of 2017 for a start in Fall 2017. The program started to show strong signs of growth.
- **Restructuring** of the graduate program in the **Computer and Information Science** department to be an umbrella program that supports Computer Science, Information Systems and Information Technology and introduces a fast track pathway is currently underway.
- A **graduate scholarship** strategically directed at the MA in English as a Second Language (ESL) to take advantage of prior cohorts of non-degree seeking students who completed an ESL academy program.

Texas A&M University- Kingsville

Texas A&M University-Kingsville (TAMUK) is a Hispanic Serving Institution founded in 1925 with 8000+ enrollment. TAMUK is accredited by the Southern Association of Colleges and Schools Commission on Colleges to award baccalaureate, master, and doctorate degrees. Its Carnegie Classification is Doctoral Universities: High Research Activity.

November 2011 – May 2016: Associate Vice President for Research and Graduate Studies, Graduate Dean in charge of academic programs and enrollment

- Developed and implemented a strategic plan for increasing graduate enrollment and improving the quality of graduate education at TAMUK.
- Graduate enrollment at the university level increased by more than 100%. The number of applications for graduate studies increased many folds in the Fall semester, 2015 as compared to Fall 2011.
- Advocated for resources to strategically increase graduate enrollment in STEM fields and particularly engineering and sciences, while supporting the development of other programs in business, humanities, social sciences, and education.
- Implemented strategies that contributed to TAMUK receiving the highest increase in formula funding for the 2013/2014 cycle and projected for a similar increase in the 2015/2016 cycle.
- Oversaw five Doctoral Programs and over 30+ MS programs managing graduate enrollment and the application process in coordination with the academic programs.
- Led the initial development of a Ph.D. program in Sustainable Energy Systems Engineering and actively supported the effort for obtaining a new Ph.D. program in Sustainable Energy Systems Engineering, working with Dean of Engineering and Provost.

Chief Research Officer in charge of research development and research compliance

- Developed and actively implemented a strategic plan for increasing Research Activities and Research Funding at TAMUK. Restricted Research Expenditures increased by 28% in FY15, with total research expenditures reaching ~\$20 Million in FY 15, up from ~ \$16 Million in FY 12.
- Collaborated on the development of the Eagle Ford Shale Center for Research Education and Outreach (EFCREO) in the College of Engineering.
- Coordinated and promoted collaborative research activities within the university through:
 - The creation of Faculty Research groups for Biomedical Research and Social Behavioral Research.
 - Promoting collaboration among faculty from various colleges through seed funding programs.
 - Supporting undergraduate research initiatives.
 - Co-developing funded opportunities in collaboration with colleges and other senior leaders.
 - Building collaborative research activities with national and regional universities.
- Led a reorganization effort for the National Natural Toxins Research Center funded by NIH, which created a strong leadership team in collaboration with Texas A&M Health Sciences Center.
- Participated in establishing a unique research program funded collaboratively with the Office of Vice President for Research at Texas A&M University in support of a Venomics program at the National Natural Toxins Research Center.
- Led several initiatives to improve Research Compliance Infrastructure on campus, working with various independent compliance committees to ensure a safe research environment.
- Prioritized and allocated Funds for the university in support of research and graduate students.
- Provided feedback and evaluation regarding Tenure and Promotion Decisions to the Provost with focus on Research and Graduate Studies

August 2010 – August 2012: Associate Dean of Engineering

- Partnered in planning and implementation of a 5-year strategic plan for the College of Engineering.
- Managed all aspects of graduate programs in coordination with departments and the Graduate Council in the College of Engineering, TAMUK.
- Introduced new policies to improve the quality of graduate programs in the College of Engineering.
- Led the development of a Ph.D. program in Sustainable Energy Systems Engineering and developed tracks in the existing Ph.D. program in Environmental Engineering.
- Oversaw the review and approval of all sponsored research proposals in the College of Engineering.
- Organized research and educational efforts to write proposals to various agencies. Coordinated efforts to receive funding from various federal agencies, including the Department of Homeland Security, the National Science Foundation, the Nuclear Regulatory Commission, and the Department of Education.
- Addressed personnel issues related to faculty and graduate students in the College of Engineering.

- Developed innovative programs to increase participation of domestic students and increase enrollment of international students in graduate programs.
- Assumed a leadership role in developing integrative proposals in collaboration with other regional universities.
- Led the evaluation and continuation review of tenure track faculty at the college level with the goal of improving faculty performance in teaching and scholarship.
- Partnered with the Dean of Engineering on evaluating faculty performance and Tenure and promotion decisions.

Tennessee Tech University

Tennessee Technological University (TTU) has an enrollment of more than 10,000 students. Tech offers degrees from eight academic schools and colleges: Agriculture and Human Ecology, Arts and Sciences, Business, Education, Engineering, Fine Arts, Interdisciplinary Studies, and Nursing. It is accredited by the Southern Association of Colleges and Schools Commission on Colleges to award baccalaureate, master's, specialist, and doctoral degrees. Its Carnegie Classification is Doctoral Universities: High Research Activity.

June 2006 – August 2010: Professor, ECE Department,

- Project Director and Principal Investigator on major research projects funded by US Department of Energy and the State of Tennessee, as well as a Research Experience for Undergraduates and a Research Experience for Teachers funded by the National Science Foundation. Activities as Principal Investigator on research projects included:
 - Conceptualization of projects; forming research teams from peers, industrial partners, and national laboratory researchers.
 - Developing research plans and leading technical research, managing large multidisciplinary research teams, evaluating progress, and prioritizing resources and research tasks.
 - Budgeting, managing, developing quarterly reports, and disseminating results.
- Graduate coordinator of the ECE Department with responsibilities including coordination of admission of graduate students, selection of teaching assistants, review and update of Graduate Program handbook. Represented the department in the College of Engineering graduate committee.
- Elected and served as Chair of Tennessee Tech University Administrative Council for the Academic year 2009/2010. Council was responsible for recommending administrative policies to the President of the university.
- Represented Tennessee Tech University in a system-wide committee on reforming Graduate faculty workload in the Tennessee Board of Regents system 2008/2009.
- Chaired the departmental committee developing a self-study report on the graduate MS program presented for external review.
- Taught graduate and undergraduate courses in Electrical and Computer Engineering and conducted educational research on the improvement of the teaching of programming to freshman engineering students.
- Supervised undergraduate, MS, and Ph.D. graduate student researchers participating in research projects,
- Represented the department in the university faculty senate, university administrative council, university committee on patents and copyrights.
- Member of the Fulbright technical committee for review of international Fulbright applications in the area of Electrical Engineering.
- Chaired tenure and promotion committees for several faculty members.
- Initiated and chaired an Ad-hoc committee on evaluating potential programs in Alternative Energy in the College of Engineering.
- Initiated and developed an Alternative Energy sequence of courses in the Electrical Engineering department.
- Designated by the chair to cover for the department chair duties during off-campus absences 2008/2009.
- Presented research results in several national and international conferences in the US and overseas.

August 2001 – June 2006: Associate Professor, ECE Department

- Directed a Major National Research Project on the Sensing and Control of Cupola Furnaces Funded by the Office of Industrial Technology, US Department of Energy.
- Directed an international research project with funding from the National Science Foundation with Collaborators from Central Metallurgical Research and Development Institute, Helwan, Egypt.
- Led an outreach program in collaboration with ORNL for marketing high-tech research solutions to manufacturers in Tennessee with funding from the state department of energy.
- Mentored junior faculty members in developing research proposals.
- Taught undergraduate and graduate courses in the Electrical Engineering department.
- Supervised graduate and undergraduate students on research projects.

- Chaired the university committee on patents and copyrights and was a member of the faculty senate and administrative council.
- Actively participated in the departmental committee for ABET accreditation.
- Participated in several NSF Graduate Research Fellowship Review Panels and other NSF proposal review panels.
- Participated and presented research results in national and international conferences and workshops.
- Received tenure in the Electrical Engineering department at Tennessee Tech University.

January 1997 – June 2001: Assistant professor, ECE Department

- Co-developed a laboratory for Mechatronics with funding from the NSF CCLI program.
- Led a team of researchers from Idaho National Engineering Laboratory, Utah State University, and Tennessee Tech University to propose a national research project on the integration of sensing and control with an application to Cupola Iron Melting furnaces with funding from the US DOE.
- Developed and taught undergraduate and graduate courses on “Instrumentation and Intelligent Systems.”
- Developed a graduate laboratory for Artificial Neural Networks with funding from Neural Ware Systems.
- Performed and published research on reconfigurable remote access laboratories.
- Served as Associate Editor for several conferences, including the American Control Conference and the Conference on Decision and Control.
- Served as the local arrangement chair for the Southeastern Symposium on Systems and Theory, 1997.

Qatar University

Qatar University was established in 1977. Qatar University serves as Qatar’s primary institution of higher education with an enrollment of 23,000 students. It offers courses in English and Arabic.

January 2007 – June 2007: Fulbright Scholar

Assignment involved research in applications of intelligent systems in the gas industry and lecturing in the Department of Electrical Engineering at Qatar University.

- Taught undergraduate courses in Control Engineering and developed laboratory experiments for Control Laboratory.
- Attended and participated in cultural events organized by the US Embassy in Doha, Qatar.
- Presented on request of the US Embassy in Doha, Qatar, a lecture on Higher Education in the US for a conference organized by the Omar Ibn Al-Khattab Educational Complex.
- Built collaborative bridges with faculty and industry in Qatar to identify research problems relevant to the gas industry.
- Identified and developed a research project for undergraduate students in Qatar on intelligent alarm management systems.
- Developed collegial relations with Faculty in Texas A&M, Qatar, and Carnegie Mellon, Qatar.
- Presented research seminars for faculty and administrators on effective design of Research Experience for Undergraduates Sites.
- Presented invited lectures at the University of UAE in Al-Ain and the American University in Sharjah on “High Tech Research in Low Tech Industries.”
- Presented the Keynote Speech at a major conference in Al-Zaytoonah University, Amman, Jordan.
- Managed funded research projects and supervised graduate students in the US while on assignment at Qatar University using interactive teleconferencing.

Oak Ridge National Laboratory

Oak Ridge National Laboratory (ORNL) is the largest US Department of Energy science and energy laboratory, conducting basic and applied research to deliver transformative solutions to compelling problems in energy and security.

August 2006 – December 2006: Visiting Scientist, Image Sciences Group

A non-instructional assignment funded by a combination of Tennessee Tech and Oak Ridge National Laboratory through the Oak Ridge Associated Universities program.

- Participated in research on an NIH-funded project on the automatic diagnosis of Diabetic Retinopathy using an image processing technique for feature extraction and statistical-based methods for Content-Based Image Retrieval (CBIR).
- Coauthored several papers based on research results.
- Networked and built relations with scientists at ORNL.

Research & Development Experience

Black font indicates basic and applied research projects.

Blue font indicates pedagogical research projects mainly focused on Student Success.

Green font indicates a focus on community engagement.

- **September 2014 – September 2017**
Co-Principal Investigator, [National Science Foundation](#), \$346,000
Integration of Research in Sustainable Energy Engineering across Disciplines
This program provided experiential research opportunities for undergraduate students in the interdisciplinary field of energy systems. It supported the strategic focus on energy research at TAMUK. It was supported by researchers from various departments within the STEM area.
- **September 2013 – August 2016**
Principal Investigator, Department of Education, \$750,000.
Minority-Centered Education through Research and Innovative Teaching (MERIT)
The program is focused on increasing the retention of students in the initial two years in engineering programs through involving them in innovative mentoring and research activities.
- **August 2012 – July 2017**
Co-Principal Investigator, National Science Foundation, \$500,000.
CASCaded Mentoring And Design Experiences (CASCADE)
The program establishes an innovative teaching environment providing a design-based experience for engineering students with the aim to increase the retention and graduation rates of students at TAMUK.
- **June 2011 – June 2013**
Co-Principal Investigator, Nuclear Regulatory Commission, \$230,000.
A Minority Program in Nuclear Engineering
The program aimed at establishing a minor in Nuclear Engineering in the Mechanical Engineering Department Open to students in various departments in the College of Engineering at Texas A&M University-Kingsville.
- **August 2009 – February 2011**
Faculty Investigator, Phase IV, APPI, US ARMY, \$110,000.
In Charge of Project Task Focused on Development of Integrated Control of Solid Oxide Fuel Cell System
The task goal was the development of a framework for a master controller for a portable SOFC system. This required the supervisory control and coordination of subsystems, including Balance of Plant Control, Power Electronics Control, and overall monitoring of the different SOFC system parameters.
- **August 2010 – August 2014,**
Co-Principal Investigator, National Science Foundation, \$500,000.
Enhancing the Programming Experience for Engineering Students through Hands-on Experiences. (Phase II)
This project was built on results obtained through the Phase I project funded by the NSF. It was still focused on significantly enhancing the programming experience for engineering students, improving their ability to effectively use computer control and computer programming to solve real-world engineering problems. It was expanded to include several universities, including the University of Kentucky and Texas A&M University-Kingsville.
- **June 2009 – May 2012,**
Principal Investigator, National Science Foundation, \$499,000.
RETainUS: Research Experience for Teachers in the Manufacturing for Competitiveness in the United States.
The project goal was to contribute to retention and advancing the manufacturing base in the US through meaningful changes in the 9-12 grades teachers' understanding of manufacturing and how it relates to the math and science curriculum with the following objectives: 1) teach the teachers through intense involvement in the process of engineering research; 2) improve participants' perspectives on manufacturing as a self-fulfilling environment, fertile with research and development opportunities; 3) improve the learning environment for students, and 4) achieve a lasting improvement in the curriculum for Grades 9–12.

- October 2008 – September 2010,
Co-Principal Investigator, National Science Foundation, \$307,000.
Acquisition of Research and Education Equipment for Ultra-Wideband Wireless Sensor Network and Radar Sensing Integration.**

This was a multidisciplinary project that aimed at building the research infrastructure within the Center for Manufacturing Research at Tennessee Tech. The acquired equipment was multi-purpose with a wide range of applications. One such application of importance to the manufacturing industry was the utilization of ultra-wideband technology in the characterization of sand molds in the casting industry.
- April 2008 – December 2009,
Co-Principal Investigator, National Science Foundation, \$150,000.
Enhancing the Programming Experience for Engineering Students through Hands-on Experiences.**

This project was focused on significantly enhancing the programming experience for engineering students, improving their ability to effectively use computer control and computer programming to solve real-world engineering problems, and to lead to greater engagement of a diverse group of students with improved student retention through early hands-on applications with computer-controlled engineering systems that incorporate hardware in the loop (HIL) applications and enables transparency between program and program control in an appropriate context for engineering practice.
- June 2008 – March 2009,
Principal Investigator, National Science Foundation, \$20,000.
Research Experience for Teachers Supplement to REU Project in Industrial Applications of Sensing, Modeling, and Control.**

The REU project focused on the improvement of a research supplement that provided two teachers with research experience in one of the most traditional manufacturing processes in the US, namely metal casting. Funding exposing the teachers and hence their students to research opportunities in manufacturing had the potential of changing the view of the field of manufacturing as being out of fashion in the eyes of the new generations selecting a career in the near future. It provided an opportunity for PI to better understand issues related to teachers' training in research and led to the successful funding of a Research Experience for Teachers site at Tennessee Tech University.
- June 2006 – June 2009,
Principal Investigator, National Science Foundation, \$300,000.
Research Experience for Undergraduates in Industrial Applications of Sensing, Modeling, and Control.**

The project presented opportunities for collaborative multidisciplinary research to 30 undergraduate students from 10 different universities in the USA and one student from Qatar. An innovative aspect of the project was that it allowed students to take the role of Principle Investigators on real-world industrial problems and built on existing foundry research at Tennessee Tech University and a consortium of industrial partners. Students from the fields of Electrical, Mechanical, Chemical, and Industrial Engineering participated in the program. The program was based on a strong integration of research and education into industrially motivated applications. The research was focused on increasing the competitiveness of the US metal casting industry, reducing energy consumption and environmental impact, and changing the image of this multi-billion-dollar industry to a field fertile with research opportunities. It was focused on addressing the lack of a highly educated workforce by fostering interest in multidisciplinary, high-tech research in the important metal-casting industry.
- October 2005 – October 2007,
Principal Investigator, Tennessee Department of Energy, \$100,000.
An Outreach Program to Manufacturing Industries in Tennessee.**

The project was focused on showcasing advanced state-of-the-art research at Tennessee Tech University and Oak Ridge National Laboratory and building collaborative links with manufacturers in the state of Tennessee. The focus of the outreach from Tennessee Tech was on the casting industry introducing technology for green sand mold characterization to a large foundry in Tennessee. The technology is currently being patented with continuing investigation on the foundry floor.
- January 2004 - June 2010,
Principal Investigator, US Department of Energy, \$3.0 Million (Including Cost Share).
In-Situ Real-Time Monitoring and Control of Mold Making and Filling Processes.**

The project represented a model for a multidisciplinary collaborative effort with each member playing an integral role in the team in collaboration with *ORNL, GM, Carbo ceramics, Foseco-Morval, Metal Casting Inc., Mueller, Lodge, and other partners*. It took an innovative approach to introduce technologies for real-time characterization of sand molds, lost foam patterns, and monitoring of the mold filling process. It focused on the online measurement and control capabilities of a typical foundry to monitor the manufactured mold/pattern performance characteristics prior to and during the mold/pattern filling process. This was motivated by the fact that while data exist for measuring bulk material properties and process conditions, little information exists for the correlation of specific mold/pattern properties, their specific fill performances, and the casting quality/outcome. A strong educational component was integrated into the research plan to utilize increased awareness of the industry professional, the potential benefits of the developed technology, and the potential benefits of cross-cutting technology. The program also aims at enhancing the image of the metal casting industry where high technology opportunities exist.

- **September 2004 – September 2007,**
Faculty Investigator, Oak Ridge National Laboratory, \$290,000.
Counter Gravity and Pressure Assisted Lost Foam Magnesium Casting.
The project developed the magnesium casting capabilities at Tennessee Tech and utilized a counter gravity casting machine in combination with lost foam and magnesium alloys. This project was intertwined with another concurrent project on In-Situ Metal Fill Monitoring and Control. As a faculty investigator, my participation in this project was focused on the improvement of the automatic control on the counter-gravity casting machine.
- **August 2003 – December 2005,**
Principal Investigator, National Science Foundation, \$30,000.
Production of High Purity Iron from Cupola Furnaces.
This was an international project with collaboration from Egyptian experts on the Cupola Iron Melting Furnaces. The project started with outreach by the PI to researchers from the Central Metallurgical Research and Development Institute (CMRDI). A project was conceived that was built on the experience of researchers in the US and Egypt. Due to the sudden tragic death of the Egyptian PI, the focus was shifted slightly but still focused on improved understanding of cupola melting furnaces. The project involved collaborative visits by American and Egyptian Scientists to research facilities of the other group. The project achieved its goals of global understanding of cupola furnaces and how they are adapted across different continents.
- **January 1999 - January 2002,**
Principal Investigator, Department of Energy, \$964,239.
Integrated Industrial Process Sensing and Control Systems Applied to and Demonstrated on Cupola Furnaces.
This was a collaborative project integrating expertise from Idaho National Engineering Laboratory, Utah State University, and supported by the American Foundry Society. It focused on the development of a general framework for the fusion of multi-modal data sources and for the **integration** of confidence levels in the fused data into the control structure. The industrial application of the developed methodology was the control of temperature, melt-rate, and carbon composition of cupola melting **furnaces**. The techniques were demonstrated successfully on an **experimental** cupola furnace in Albany Research Center. The research results were published in 4 Journal papers and 15 papers in refereed conference Proceedings.
- **February 2000-January 2001**
Co-principal Investigator, NSF, \$62,000.
Development of a Mechatronics and Intelligent Machines Laboratory.
This project was a collaboration between the Mechanical and Electrical and Computer Engineering Departments. It resulted in the establishment of a Mechatronics laboratory that supported a joint mechatronics course for students from both departments and co-taught by the two Co-PIs. The laboratory was used by many students from both Mechanical and Electrical and Computer Engineering departments.

Publications and Scholarly Contributions

Black font indicates basic and applied research publications.

Blue font indicates pedagogical publications mainly focused on Student Success.

Green font indicates publications with a focus on community engagement.

Patents

1. Mohamed Abdelrahman, Mike Baswell, and Kenneth Currie. Differential Sand Compaction Sensor. US 10,816,496 B2, October 2020.
2. Mohamed Abdelrahman, Mike Baswell, and Kenneth Currie. Differential Sand Compaction Sensor. US Patent US 8,890,549 B2, November 2014.
3. Mohamed Abdelrahman and Mike Baswell. Apparatus and Method for Monitoring and Evaluating Greensand Molds. US Patent US 8205663 B2, June 2012.

Books & Major Technical Reports

4. Wael Deabes and Mohamed Abdelrahman, Electrical Capacitance Tomography for Conductive Materials, VDM Verlag Dr. Müller, May 2011.
5. Mohamed Abdelrahman, Marie-Anne Mundy, From Research to Classroom: A Hands-on Approach. [Available Online](#).
6. Mohamed Abdelrahman et al., Integrated Intelligent Industrial Process Sensing and Control: Applied to and Demonstrated on Cupola Furnaces. [US Department of Energy Contract # DE-FC02-99CH10975](#), 170 Pages, 2002.
7. Mohamed Abdelrahman et al., In Situ Real-Time Monitoring and Control of Mold Making and Filling Processes. [US Department of Energy Contract # DE-FC36-04GO14228](#), 288 Pages, 2011.
8. "Computer Operated Cupolas," Book Chapter, 6th edition of the Cupola Handbook, AFS, Des Plain, IL, 2000 (With Kevin Moore, Paul King, and Denis Clark).

Refereed Journals

9. "Application of Electrical Capacitance Tomography for Imaging Conductive Materials in Industrial Processes," **Journal of Sensors**, vol. 2019, ID 4208349, 2019. <https://doi.org/10.1155/2019/4208349> (With Wael Deabes, Alaa Sheta, Kheir Eddeine Bouazza)
10. "Enhancing the Programming Experience for First-Year Engineering Students through Hands-On Integrated Computer Experiences," **Journal of STEM Education: Innovations and Research**, Volume 13, Issue 4, July- September 2012. (With Stephen Canfield, Sheikh Ghafoor)
11. "Modeling, Control, and Integration of a Portable Solid Oxide Fuel Cell System," **Transactions of the ASME – Journal of Fuel Cell Science and Technology**, Vol. 9, Issue 1, February 2012 (With Puran Adhikari)
12. "A Feature-based solution to forwarding Problem in Electrical Capacitance Tomography of Conductive Materials," **IEEE Transactions on Instrumentation and Measurement**. Vol. 60, Issue 2, Feb. 2011, (With Ankush Gupta and Wael Deabes)
13. "Online Differential Sand Compaction Sensor for Optimizing the Lost Foam Molding Process," **Transactions of American Foundry Society**, Spring 2010 (With Mike Baswell, Suhas Jagtap)
14. "Nonlinear Fuzzy Assisted Image Reconstruction Algorithm for Electrical Capacitance Tomography," **Instrumentation Society of America Transactions**, Vol. 49, Issue 1, 10-18, Jan. 2010. (With Wael Deabes)
15. "A New Wide Frequency Band Capacitance Transducer with Application to Measuring Metal Fill Time," **Sensors & Transducers Journal**, Vol. 100, Issue 1, pp. 72-84, Jan. 2009. (With Wael Deabes and PK Rajan).
16. "Optimizing Measurement Accuracy of Hydrogen Gas Porosity in Aluminum Castings under Varying Barometric Pressures," **Transactions of American Foundry Society**, Spring 2009. (With Zack Minchi, Mike Baswell, Fred Vondra)

17. "Automated Diagnosis of Retinopathy by Content-Based Image Retrieval," **RETINA: The Journal of Retinal and Vitreous Diseases**, November/December 2008 - Volume 28 - Issue 10 - pp 1463-1477 (With Ed Chaum, Ken Tobin, Thomas P Karnowski; V. Priya Govindasamy)
18. "An Impedance Measurement Device for Non-destructive Greensand Mold Inspection," **Transactions of American Foundry Society**, Spring 2008. (With Mike Baswell, Wael Deabes)
19. "Electrical Capacitive Tomography Sensor for Estimating Metal Fill Profile in Lost Foam Casting," **Transactions of American Foundry Society**, Spring 2008. (With Wael Deabes)
20. "A complete Multiagent framework for robust and adaptable dynamic job shop scheduling," **IEEE Transactions on Systems, Man and Cybernetics-Part C: Applications and Reviews**, Vol. 37, No 5, September 2007. (With Ning Liu and Srin Ramaswamy)
21. "Image Processing for Characterization of Surface Properties for Foam Structures," **Transactions of American Foundry Society**, Spring 2007. (With Wael Deabes)
22. "A New Instrument for Measurement of Greensand Properties," **Transactions of American Foundry Society**, Spring 2007. (With Mike Baswell)
23. "Monitoring of Metal Fill in Lost Foam Casting," **Transactions of Instrumentation Society of America**, October 2006. (With Jenison Arulanantham, Ralph Dinwiddie, Graham Walford, and Fred Vondra)
24. "Addressing the Image and Human Resource Issues of Casting Industry through Multidisciplinary Research Experience for Undergraduates," **Transactions of American Foundry Society**, Spring 2007. (With Mike Baswell and Sally Pardue)
25. "A Genetic Algorithm for Single Machine Total Weighted Tardiness Scheduling Problem," **International Journal of Intelligent Systems and Control**, Vol. 10, No. 3, pp. 218-225, Sept 2005 (With Ning Liu and Srin Ramaswamy).
26. "Innovative Methods for Measurement of Foam Quality," **Transactions of American Foundry Society**, April 2005, (With Madura Josh, Jerry Barendrecht and Mike Renfro)
27. "Vibration-Based Method for Characterization of Foam Fusion," **Transactions of American Foundry Society**, April 2005, (With Naren Shaam and Sally Pardue)
28. "Fuzzy Logic Based Expert System for Cupola Furnaces," **Transactions of American Foundry Society**, April 2005, (With Sridhar Kuppuswamy)
29. "Feasibility Study for Capacitance Based Characterization of Sand Molds," **Transactions of American Foundry Society**, April 2005, (With Apar Vaidyanathan and Mike Baswell)
30. "A Flask and Methodology for Lost Foam Casting Under Controlled Environment," **Transactions of American Foundry Society**, April 2005, (With Ken Currie and Graham Walford)
31. "Hardware Implementation of Automated Sensor Self-validation System for Cupola Furnaces," in **Journal of Computers and Industrial Engineering**, April 2004 (with Wagdy Mahmoud and Roger Haggard).
32. "A Methodology for Integrating Multiple Sensor Fusion in the Controller Design," **Transactions of Instrumentation Society of America**, Vol. 42, April 2003, (with P. Kandasamy).
33. "A Fuzzy Controller for Cupola Iron Melting Furnaces," **Transactions of American Foundry Society**, Spring 2002, (with (Mike Baswell).
34. "A methodology for self-validation, fusion, and reconstruction of quasi-redundant sensors," **IEEE Transaction on Instrumentation and Measurement**. Vol. 50, No. 6, December 2001, (with J. Frolik and P. Kandasamy).
35. "A Methodology for Development of Configurable Remote Access Measurement System," **Transactions of Instrumentation Society of America**, Volume 39, 441 - 458, December 2000, (Received Sigma Xi Award 2001), (with Abdul Rasheed).
36. "Gas Metal Arc Welding Control: Part 11-Control Strategy," **Journal of Nonlinear Analysis**, Volume 19,137-145,1998, (with K. L. Moore and D. S. Naidu).
37. "Finite-Time Disturbance Attenuation Control for Singularly Perturbed Discrete-Time Systems," **Journal of Optimal Control. Applications and Methods**, Vol. 35, pp. 85- 93, 1999, (with D. S. Naidu and K. L. Moore).
38. "Intelligent Signal Validation for Cupola Iron Furnaces: Part I-Methodology," **Transactions of American Foundry Society**. Spring 2000. (with S. Subramanian).
39. "Intelligent Signal Validation for Cupola Iron Furnaces: Part II-Testing and Verification," **Transactions of American Foundry Society**, Spring 2000, (with S. Subramanian).

Refereed Conferences

40. "How to Increase the Impacts of the REU Experience in an Interdisciplinary Research-based REU Site," in Proceedings of ASEE Annual Conference and Exposition, June 2018, Salt Lake City, Utah. (With Hua Li and Kai Jin)
41. "Improve Retention Rate and Recruitment of Minority Students through Enhanced Mentoring and Summer Research Programs," in Proceedings of ASEE Annual Conference and Exposition, Columbus, Ohio, June 2017. (With Hua Li, Kai Jin, Mary Gonzalez, and Maria Martinez)
42. "REU Student Engagement during and after REU program: A Case Study Comparing Individual Project with Group Project," in Proceedings of ASEE Annual Conference and Exposition, Columbus, Ohio, June 2017. (With Hua Li and Kai Jin)
43. "Integrating Research in Sustainable Energy and the Environment Across Disciplines through an NSF Funded REU Site," in Proceedings of ASEE Annual Conference and Exposition, Seattle, Washington, June 2015. (With Hua Li)
44. "CASCaded Mentoring and Design Experiences (CASCADE)" in Proceedings of ASEE Annual Conference and Exposition, Seattle, Washington, June 2015. (Marie Anne L Mundy, Sel Ozelcik, David Ramirez)
45. "Towards an Integrated Hardware And Software Book (HASOB) in Proceedings of ASEE Annual Conference and Exposition, Seattle, Washington, June 2015. (Mohamed Abdelsalam Salem, Mais Nijim)
46. "Defect Simulation of AL319 in Lost Foam Casting – an REU Undergraduate Research Experience," in Proceedings of ASEE Annual Conference and Exposition, Indianapolis, IN, June 2014. (With Dr. Ahmed Elsayy and Dr. Sally Pardue)
47. "Best Practices in Creating and Running Research Experience Programs," in Proceedings of ASEE Annual Conference and Exposition, San Antonio, TX, June 2012. (With Dr. Muhittin Yilmaz)
48. "Spy Code: A Learning Module Linking Nano-tubes Research Experience to Teaching Algebra," in Proceedings of ASEE Annual Conference and Exposition, San Antonio, TX, June 2012. (With Dr. Reza Nekovei)
49. "Fabrication and Testing of a Simple "Bionic Arm" Demonstrator with an Artificial Tendon" In Proceedings of ASEE Annual Conference and Exposition, San Antonio, TX, June 2012. (With Jared Cavasos, Larry Peel)
50. "Citrus Waste Biorefinery: Effects of temperature, particle size reduction and lime pretreatments on Grapefruit processing waste (GPW) biomass" in Proceedings of ASEE Annual Conference and Exposition, San Antonio, TX, June 2012. (With N. Sears, j Beynon, E. Garcia, R. Rivas, K. Jones, P. Mills)
51. "Using either Hydrogen or Dithionite as Reductant in Uranium Contaminated Groundwater at Post-Leach Uranium Mining Sites, South Texas" in Proceedings of ASEE Annual Conference and Exposition, San Antonio, TX, June 2012. (With Lee Clapp, P. Pena)
52. "Study of the behavior of Shape Memory Polymers in the Active Disassembly Process" in Proceedings of ASEE Annual Conference and Exposition, San Antonio, TX, June 2012. (With J. Ortega-Saenz, Hua Li)
53. "Validity of the Methodology for Establishing Baseline Water Quality for Uranium" in Proceedings of ASEE Annual Conference and Exposition, San Antonio, TX, June 2012. (With M. Hamilton, Lee Clapp)
54. "Studying the Physical Properties and Auxetic Behavior of 3D-printed Fasteners" in Proceedings of ASEE Annual Conference and Exposition, San Antonio, TX, June 2012. (With Larry Peel, S. Caballero)
55. "A learning module using the engineering design process and legacy cycle for a freshman Robotics class" in Proceedings of ASEE Annual Conference and Exposition, San Antonio, TX, June 2012. (With Yan Xu, M. Yilmaz,)
56. "RET Project in Additive Manufacturing" in Proceedings of ASEE Annual Conference and Exposition, Vancouver, BC, Canada, June 2011. (With Lisa Denny Choate, Kenan Hatipoglu, Ismail Fidan)
57. "Legacy Cycle As A Vehicle For Transference Of Research To The Classroom" in Proceedings of ASEE Annual Conference and Exposition, Louisville, Kentucky, June 2010. (Holly Anthony, Melissa Geist, Sally Pardue, Evangelynn Thurber)
58. "Bringing Engineering Ideas Based On Nano Materials Into The High School Science Classroom: Research Into Practice" in Proceedings of ASEE Annual Conference and Exposition, Louisville, Kentucky, June 2010. (Holly Stretz, Angela McCulley, Bridget Pugh)
59. Two Legacy Cycle Modules in Math and Chemistry for High School Students Based On Fuel Cell Technology, in Proceedings of ASEE Annual Conference and Exposition, Louisville, Kentucky, June 2010. (Cynthia Rice-York, T. Dalton York, Cynthia Stowers, Robert Sircy)
60. "Nonlinear Single Step Fuzzy Image Reconstruction Algorithm for Grounded Conductors in ECT," in Proceedings of 2010 American Control Conference, (W. A. Deabes and P. K. Rajan)
61. A Feature-based Solution to Forward Problem in Electrical Capacitance Tomography", in *Proceedings of 2010 American Control Conference, Baltimore, Maryland (With Ankush Gupta)*

62. "Direct Fuzzy Reconstruction Algorithm for Grounded Conductive Materials, in Proceedings of *International Instrumentation and Measurements Technology Conference*, Austin, TX (With Wael Deabes).
63. "Integrated Technique for Data Transmission Reliability in Metal Fill Monitoring Using Wireless Sensor Network," in Proceedings of *The International Conference on Information Technology ITNG 2010*, Las Vegas, NV, April 2010 (With Yogesh Barve).
64. "Fuzzy Mathematical Modeling for Reconstructing Images in ECT," in Proceedings of *ICCES09 International Conference on Computer Engineering and Systems*, Cairo, Egypt, Dec. 2009. (With Wael Deabes and Alaa Sheta)
65. "Solution of the Forward Problem of Electric Capacitance Tomography of Conductive Materials," in Proceedings of *the 13th World Multi-Conference on Systems, Cybernetics, and Informatics: WMSCI 2009* (With Wael Deabes).
66. "Reconfigurable Wireless Stand-alone Platform for Electrical Capacitance Tomography," in *Proceedings of the 2009 IEEE Symposium on Computational Intelligence in Control and Automation*, March 30 – April 2, 2009, Sheraton Music City Hotel, Nashville, TN. (With Wael Deabes, Omar Elkeelany, and Mohamed Abdalla)
67. "A Novel PID Controller for a Counter Gravity Casting Machine," in *Proceedings of the 2009 World Congress on Electronics and Electrical Engineering, WCEEENG '09*, April 6-9, 2009, Cairo, Egypt. (With Landon Longnecker, Wael Deabes).
68. "Analysis, Design, and Application of a Capacitance Measurement Circuit with Wide Operating Frequency Range," in *Proceedings of the 2008 IEEE Multi-conference on Systems and Control*, September 3-5, 2008, Hilton Palacio del Rio in San Antonio, Texas, USA. (With Wael Deabes and Conard Murray)
69. "A Fuzzy-Based Reconstruction Algorithm for Estimating Metal Fill Profile in Lost Foam Casting," in *Proceedings of the 2008 American Control Conference*, 11-13 June, Seattle, Washington, USA. (With Wael Deabes and P.K. Rajan)
70. "Modeling and Control of a Counter-Gravity Casting Machine," in *Proceedings of 2008 American Control Conference*, 11- 13 June, Seattle, Washington, USA. (With Ameer Khedr, Charles Carnal and Wael Deabes)
71. "An Iterative Reconstruction Algorithm for Electrical Capacitive Tomography Using Fuzzy System," in *Proceedings of the 12th World Multi-Conference on Systemics, Cybernetics, and Informatics*, June 29 - July 2, 2008 – Orlando, Florida, USA. (With Wael Deabes)
72. "Metal Fill Profile Detection in Lost Foam Casting Process Using Capacitive Sensors," in *Proceedings of IEEE SoutheastCon 2008*, 3-6 April, Huntsville, AL, USA. (With Wael Deabes and Conard Murray)
73. "Reliable Metal Fill Monitoring System Using Wireless Sensor Networks," in *Proceedings of the Information Technology, New Generation*, Las Vegas, April 2008. (With Phaneeth Junga, Clayton Thurmer, Wael Deabes)
74. "Algorithms for Reliable Data Transmission for Metal Fill Monitoring Using Wireless Sensor Networks," in *Proceedings of the SoutheastCon Conference*, Huntsville, AL, April 3-5, 2008. (With Phaneeth Kumar Reddy Junga, Clayton Thurman, and Wael A Deabe)
75. "An REU Experience on the Industrial Applications of Sensing, Modeling, and Control," in *Proceedings of the ASEE- SE Regional Conference*, April 2008, Memphis, TN, with (Sally Pardue)
76. "A Probabilistic Framework for Content-Based Diagnosis of Retinal Disease," *29th Annual International Conf. of the IEEE EMBS*, Lyon, France, August 2007. (With Tobin, K.W., Abdelrahman, M., Chaum, E., Govindasamy, P., and Karnowski, T.P.)
77. "Preliminary Results for the Statistical Diagnosis of Retinal Pathology by Image Content," *Association for Research in Vision and Ophthalmology (ARVO) Annual Meeting*, Ft. Lauderdale, FL, May 6-10, 2007. (With Kenneth W. Tobin, Ph.D., Edward Chaum, MD, Ph.D., V. Priya Govindasamy, Thomas P. Karnowski.)
78. "Image Processing and Software Architecture for Retinal Image Search and Analysis," in *Proceedings of the 12th Annual International Meeting of the American Telemedicine Association (ATA)*, Nashville, TN, May 13-15, 2007. (With Kenneth W. Tobin, Ph.D., Edward Chaum, MD, Ph.D., V. Priya Govindasamy, Thomas P. Karnowski.)
79. "Dielectric Model of Anisotropic Mixtures Using Clifford Algebra," in *Proceedings of Science in Engineering Society conference*, Penn. State University, College Park, PA, 2006 (With Mike Baswell).
80. "Influence of Coke Combustion Processes on the Dynamic Changes of Cupola Melting Furnace," in *Proceedings of Materials Science & Technology Conference and Exhibition (MS&T'06): Product Manufacturing*, Cincinnati, OH, USA, 2006. (With K.S. Abdel Halim and M.I. Nasr)
81. "A Methodology for Multi-modal Sensor Fusion," in *Proceedings of the 31st International Conference on Computers & Industrial Engineering*, Sheraton Fisherman Wharf, San Francisco, CA, February 2 – February 4, 2003 (with V. Vijayakumar)
82. "Integration of multiple sensor fusion in controller design," in *Proceedings of the American Control Conference*, Anchorage, Alaska, May 8-10, 2002.

83. "Wavelet-Based Sensor Fusion for Data with Different Sampling Rates," *in Proceedings of the American Control Conference*, Washington D.C., June 2001. (With Min Luo and J. Frolik)
84. "Development of Configurable Remote Access Measurement Systems Using Object-Oriented Methodology," *in Proceedings of 7th International Conference on Production Engineering, Design and Control*, February 2001. (With Abdul Rasheed)
85. "A Methodology For Fusion Of Redundant Sensors," *in Proceedings of the American Control Conference*, Chicago, IL, June 2000. (With Param. Kandasamy and J. Frolik)
86. "Synthesis of quasi-redundant sensor data: a probabilistic approach," *in Proceedings of the American Control Conference*, Chicago, IL, June 2000. (With J. Frolik).
87. "Fuzzy rules for automated sensor self-validation and confidence measure," *in Proceedings of the American Control Conference*, Chicago, IL, June 2000. (With Steve Orth and J. Frolik).
88. "A Methodology for Integrating Multiple Sensor Fusion in the Controller Design," *in Proceedings of the 7th Mechatronics Forum International Conference*, Atlanta, Georgia, September 6-8, 2000. (With Param. Kandasamy)
89. "Intelligent Signal Validation for Cupola Iron Furnaces: Part I-Methodology," *in Proceedings of American Control Conference*, San Diego, California. June 1999. (with S. Subramanian).
90. "Intelligent Signal Validation for Cupola Iron Furnaces: Part II-Testing and Verification," *in Proceedings of American Control Conference*, San Diego, California. June 1999. (with S. Subramanian).
91. "Feedback Control of a Cupola – Concepts and Experimental Results," *The 2nd International Cupola Conference*, Omni Netherland Plaza Hotel, Cincinnati, Ohio, October 7 – 9, 1998. (With K. Moore, D. Clark, P. King, E. Larson).
92. "Experimental Control of Cupola Iron-Melting Furnaces," *in Proceedings of the American Control Conference*, Philadelphia, PA, June 24-26, 1998. (With K. Moore)
93. "Feedback Linearization of Current and Arc Length in GMAW Systems," *Invited paper for presentation at the American Control Conference special session on Control of Gas Metal Arc Welding*, Philadelphia, PA, June 24-26, 1998.
94. "Robust Control of Cupola Iron Furnace," *in Proceedings of American Control Conference*, Albuquerque, NM, June 4-6, 1997. (With K. Moore)

Conferences

95. "A Multi-Level Curriculum in Digital Instrumentation and Control based on Field Programmable Gate Array Technology," *in Proceedings of 2013 ASEE Southeast Section Conference*, Cookeville, TN, April 2013. (With Dr. Omar Elkeelany)
96. "A Confidence Prediction System for Metal Fill Visualization Using Electrical Capacitance Tomography" 41st Southeastern Symposium on System Theory SSST, 2009. (With Anthony Smith)
97. "A Feature-based Solution to Forward Problem in Electrical Capacitance Tomography," *in Proceedings of IEEE SSST 2009 Conference*, Tullahoma, Tennessee, March 2009. (with Ankush Gupta)
98. "A Confidence Prediction System for Metal Fill Visualization Using Electrical Capacitance Tomography," *in Proceedings of IEEE SSST 2009 Conference*, Tullahoma, Tennessee, March 2009. (With Anthony Smith)
99. "A Confidence Prediction System for Metal Fill Visualization Using Electrical Capacitance Tomography," *in Proceedings of IEEE SSST 2009 Conference*, Tullahoma, TN, March 2009.
100. "A Wide Frequency Range Circuit for Measuring Mutual Capacitance with Application to Monitoring of Metal Fill Profile," *in Proceedings of IEEE SSST 2008 Conference*, Cookeville, TN, March 2008. (With Conard Murray, PK Rajan, Justin Russel, Wael Deabes)
101. "Metal Profile Detection in Lost Foam Casting Process Using Capacitive Sensors," *in Proceedings of IEEE SSST 2008 Conference*, Cookeville, TN, March 2008. (With Wael Deabes)
102. "Design and implementation of a control system for a counter gravity casting machine," *in Proceedings of IEEE SSST 2007 Conference*, Mercer University, Macon, Georgia, March 2007. (With Wael Deabes, Erik Whitman, and Malik Davis).
103. "Characterization Of Capacitive Sensors And Monitoring Of Metal Fill In Lost Foam Casting," *in Proceedings of IEEE SSST 2007 Conference*, Mercer University, Macon, Georgia, March 2007. (With Darpan Patil and Wael Deabes).
104. "An Image Processing Approach for Surface Characterization of the Foam Patterns" *in Proceedings of IEEE SSST 2007 Conference*, Mercer University, Macon, Georgia, March 2007. (With Wael Deabes).
105. "Robust and Adaptable Job Shop Scheduling Using Multiple Agents: Further Experimental Justification," *in Proceedings of IEEE 2006 SSST Conference*, Cookeville, TN, March 2006. (With Ning Liu and Srin Ramaswamy).

106. "Design of TTUbot: A Modular Learning Platform for Integration into Engineering Curriculum," *in Proceedings of IEEE SSST 2006 Conference*, Cookeville, TN, March 2006 (With Ayman Elsayy and S. Canfield)
107. "Robust and Adaptable Job Shop Scheduling Using Multiple Agents," *in Proceedings of IEEE SSST 2005 Symposium*, Tuskegee University, Alabama, March 2005 (With Ning Liu and S. Ramaswamy).
108. "Contingency Ranking and Static Security Enhancement in Power Systems Using Heuristics Based Genetic Algorithms," *in Proceedings of SSST 2004 Symposium*, Atlanta, Georgia, March 2004 (with Ahlada Sudersan).
109. "A Feasibility Study on Using Neural Networks in Performance Analysis of Coal-Fired Power Plants," *in Proceedings of SSST 2004 Symposium*, Atlanta, Georgia, March 2004 (with Vijaya Kuntaputla).
110. "Artificial Neural Networks Based Steady-State Security Analysis of Power Systems," *in Proceedings of SSST 2004 Symposium*, Atlanta, Georgia, March 2004 (with Meera Shukla).
111. "A Fuzzy-Logic Based Expert System for A Cupola Furnace," *in Proceedings of SSST 2004 Symposium*, Atlanta, Georgia, March 2004 (with Sridhar Kuppusswamy).
112. "A Multi-Agent Model for Reactive Job Shop Scheduling," *in Proceedings of SSST 2004 Symposium*, Atlanta, Georgia, March 2004 (with Ning Liu and S. Ramaswamy).
113. "A Genetic Algorithm for the Single Machine Total Weighted Tardiness Problem," *in Proceedings of SSST 2003 Symposium*, West Virginia University, Morgantown, March 2003 (with N. Liu, and S. Ramaswamy).
114. "Towards a Multidisciplinary, Project-Based Mechatronics Curriculum," *ASEE SE Second Annual Conference*, Gainesville, Florida, Apr.7-9, 2002 (with Stephen Canfield).
115. "A Methodology for Developing Internet-Based Laboratories," *ASEE SE Section Annual Conference*, Gainesville, Florida, Apr. 7-9, 2002 (with Wagdy Mahmoud and Mani Gollapudi).
116. "Towards a Multidisciplinary, Project-Based Mechatronics Curriculum," *ASEE SE Section Annual Conference*, Gainesville, Florida, Apr. 7-9, 2002, (With Stephen Canfield)
117. "A Numerically Convenient Methodology for the Hardware Implementation of Fusion of Quasi-Redundant Sensors," *in Proceedings of the IEEE SSST 2000 Conference*, Tallahassee, Florida, March 5-7, 2000. (With Jeff Frolik and Vipin Vijayakumar)
118. "Artificial Neural Networks for Computer Security," *in Proceedings of IEEE SSST 1999 Conference*, Auburn, Alabama, March 20 - 22nd, 1999 (with H. Boghdadi).
119. "Meltrate Estimation of a Cupola Furnace Using Inferential Sensing," *in Proceedings of IEEE SSST 1999 Conference*, Auburn, Alabama, March 20 - 22nd, 1999 (with S. Subramanian).
120. "Inferential Sensors for Cupola Iron-Melting Furnaces," *in Proceedings of IEEE SSST 1999 Conference*, Auburn, Alabama, March 20 - 22nd, 1999 (with S. Subramanian).
121. "Optimal Choice of Cupola Iron Furnace Operating Point," *in Proceedings of IEEE SSST 1999 Conference*, West Virginia University, Morgantown, WV, March 8-10, 1998.

Professional Activities

Selected Honors and Recognitions as a Faculty Member

- Received [Sissom Creativity Award](#) from College of Engineering, Tennessee Technological University, 2010.
- Received [Caplenor Research Award](#) from Tennessee Technological University, Fall 2009.
- Student Award for **Most Outstanding Teaching Faculty** in ECE Department, 2009.
- Research Featured at the **Tennessee Board of Regents** Annual meeting in 2009.
- Selected as **Fulbright Scholar** to the State of Qatar, Jan 2007 – June 2007.
- Awarded a **Certificate of Recognition** by the US Department of State for Services in Building Cultural Bridges during the Fulbright Assignment, 2007.
- **Keynote speaker** to the 3rd International Conference on Information Technology in Jordan 2007.
- Awarded Al-Zaytoonah University **Honorary Shield** by the President of Al-Zaytoonah University, 2007.
- **Invited speaker**, American University in Sharjah, UAE, 2007.
- **Invited speaker**, United Arab Emirates University, UAE, 2007.
- **Invited speaker**, Al-Balqaa University, Jordan, 2007.
- Elected **Senior Member**, Instrumentation Society of America, 2008.
- Received Merit-Based Bonus Awards from College of Engineering, all years it was offered by the college of engineering 2005-2008.
- Awarded by Tennessee Tech University, a **Non-instructional University Leave** to participate in Research with ORNL, Fall 2006.

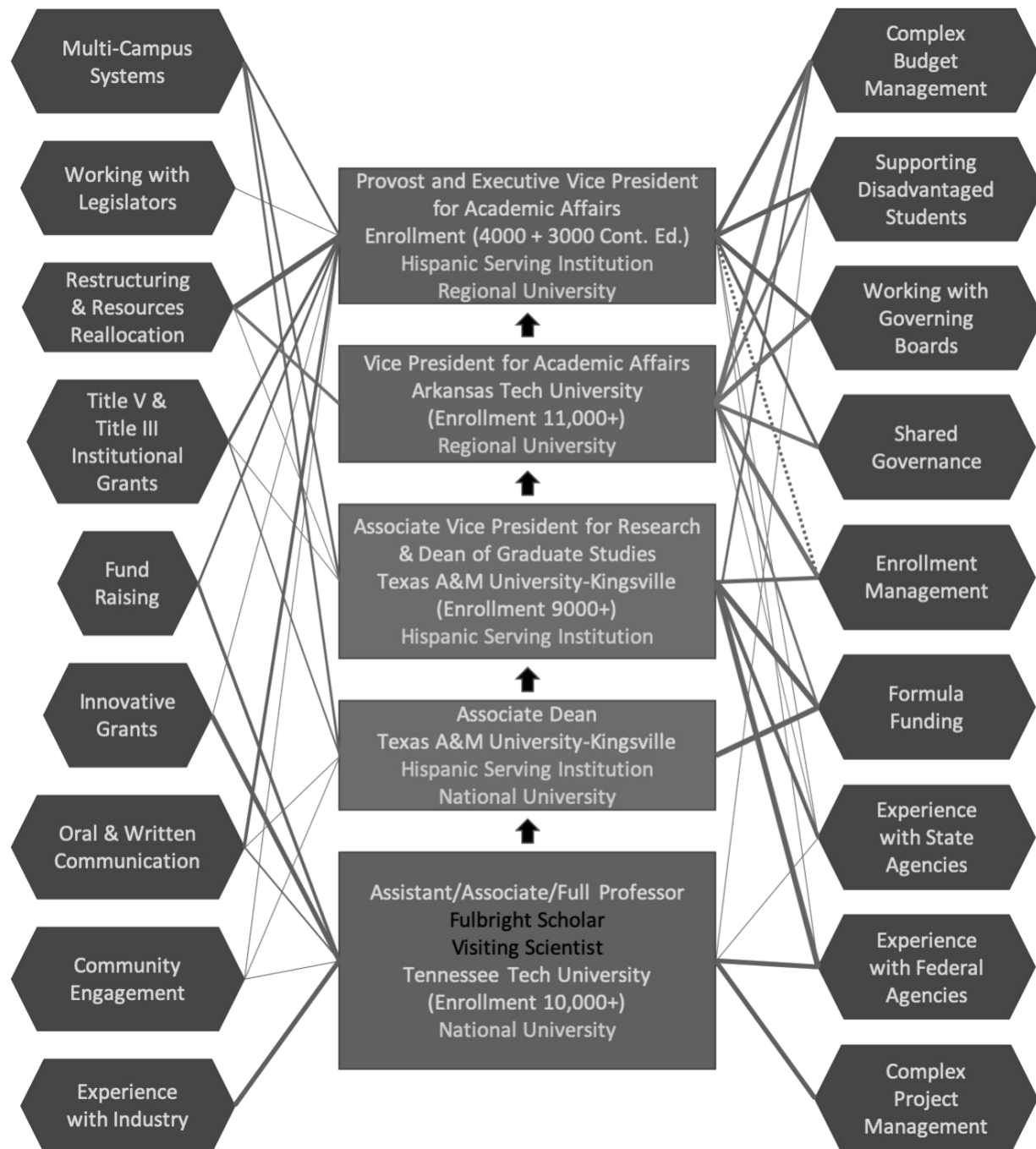
- Research Project Featured at the **Tennessee Board of Regents** Annual meeting in June 2004.
- **Chair/Co-chair** of sessions at various regional, national, and international conferences 1997 - Present.
- Received **Sigma-Xi Research Award** in 2001 for Scholarly Publication.
- **Invited speaker**, NSF international Division sponsored workshop in Collaboration with Central Metallurgical Research and Development Institute, Cairo Egypt, June 2002.
- **Invited speaker**, First Workshop on Evolutionary Computation for Engineering Applications, Cairo Egypt, December 2002.
- Elected **Senior Member** of IEEE, 2001.
- Received **Best Presented Paper Award** for 7th International Conference on Production Engineering, Design and Control, 2000.
- Recognized as **R&D Magazine 100 Awards Judge** 1997 – 2000.

Selected Professional Leadership Activities

- **Member**, Colorado Department of Higher Education Colorado Re-engaged (CORE) Initiative Working Group, 2020 – 2021.
- **Member**, Colorado Department of Higher Education Academic Council, Denver, Colorado, 2018 – Current.
- **Member, Pueblo Food Project**, a community-led coalition that helps create a more vibrant, nutritious, and equitable food system for every eater in Pueblo County, 2019 – Current.
- **Peer Reviewer**, Higher Learning Commission (HLC), HLC accredits colleges and universities in a 19-state region of the United States, 2017 – Current.
- **Chair**, Graduate Education Advisory Committee (GEAC), Texas Higher Education Coordinating Board (THECB), 2015-2016.
- **Chair**, Subcommittee on Rules for Evaluation of New Ph.D. programs, Graduate Education Advisory Committee (GEAC), Texas Higher Education Coordinating Board. TX, 2016.
- **Member**, Graduate Education Advisory Committee (GEAC), Texas Higher Education Coordinating Board (THECB) TX, 2011-2016.
- **Member** of Association of Graduate Deans Council in Texas, 2011 – 2016.
- **Member** of Steering Committee, Research Coordination Network for NSF funded Consortium, 2010 – 2016.
- **Member** Texas A&M System Working Group for Improving Regional Collaborations among System Members, 2011.
- **Chair** of the Administrative Council, Tennessee Tech University, 2009/2010.
- **Member** of Tennessee Board of Regents System-Wide Committee on Graduate Faculty Workload, 2008/2009.
- **Member** at Large, Tennessee Tech University Faculty Senate and Administrative Council, 2008.
- **Chair** of Departmental Committee for Self -Study of Master of Science in Electrical Engineering Committee, Tennessee Tech University, 2008.
- **Chair** of Graduate Committee, ECE Department, Tennessee Tech University 2008 - Present.
- **Member** of Tennessee Tech University Faculty Senate and Administrative Council, 2003 - 2006.
- **Chair** of Electrical and Computer Engineering Departmental Tenure and Promotion Committee, 2007.
- **Chair** of Tennessee Tech University Committee on Patents and Copyright, 2003 - 2006.
- **Local Chair** for Two IEEE Southeastern Symposium on System Theory conferences in 1997 and 2008.
- **Reviewer** for US Department of Energy SBIR program, Smart Grid Initiative, 48c Manufacturing Tax Credit Initiative, 2000 – 2010.
- **Member** for Fulbright Specialist Review Committee, 2008-2010.
- **NSF Panelist** for Graduate Research Fellowship Program during 2000 - 2010.
- **Associate Editor** for several IEEE conferences, 1998 – 2015

Graphical Summary of Professional Development and Competencies Acquired

The graphic below summarizes important competencies that I gained throughout my academic career. The hexagonal shapes represent those competencies and which of the positions contributed towards building them. The thickness of the line connecting the position and the competency reflects the degree to which each position contributed to forming that competency.



**Competencies are shown in Hexagonal Shapes
Line Thickness: Represents Engagement level**