

CENTER FOR COMMUNITY RESILIENCE RESEARCH, INNOVATION, AND ADVOCACY (CCRRIA)

Mission Statement

The Center for Community Resilience Research, Innovation, and Advocacy (CCRRIA) works to establish a local Community Resilience Hub and develop a research agenda on community resilience with both local and global impact. Following the National Science Foundation's (NSF) convergence research model, CCRRIA brings together various disciplines within UTRGV to address issues such as public health, climate events, social conflict, and infrastructure security. The center also strengthens research proposals through national collaboration and engages with economically-disadvantaged communities to enhance community resilience.



Cecilio Ortiz-Garcia, Ph.D.
Director

Research Focus

CCRRIA enhances university-community collaboration to reduce vulnerability in both physical and social infrastructures in the Rio Grande Valley. The center emphasizes convergence research in resilience, exploring innovative ways to address extreme events and develop actionable solutions for issues related to climate, energy, pandemics, and fiscal stability.

Current and Past Sponsors

Year 1 funding provided by The Texas Epidemic Public Health Institute (TEPHI), with ongoing discussions for recurring funding from the Texas Legislature.

Doctoral Programs Contribution

CCRRIA involves doctoral students in Psychology and Educational Leadership, supporting the development of the proposed PhD in Interdisciplinary Studies.

Achievements

The center has advanced the understanding of community resilience concepts and contributed to the development of related practices and policies.

Services

- Creating a trusted space for university-community collaboration, knowledge sharing, and transfer.
- Building a community of practice focused on community resilience.
- Developing a platform to identify and engage interdisciplinary resources.
- Co-designing and implementing workshops, webinars, conferences, grantmaking services, student assistantships, and Promotoras/es Fellowships.

Facilities

CCRRIA uses UTRGV spaces, including auditoriums, classrooms, and small conference rooms, along with survey research materials and social sciences research software.

Research Partners

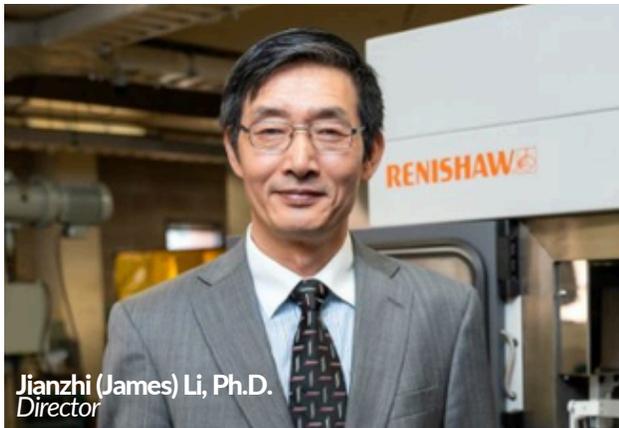
- **Local:** Rio Grande Valley governments, NGOs, and community-based organizations.
- **State:** Agencies, advocacy groups, and non-profit organizations.
- **Federal:** Federal agencies and institutions of higher learning.



INSTITUTE FOR ADVANCED MANUFACTURING (IAM)

Mission Statement

The Institute for Advanced Manufacturing (IAM), under the Division of Research, contributes to strengthening the American manufacturing base by integrating engineering disciplines that support excellence in advanced manufacturing in the South Texas region, the U.S., and beyond. Through focused research, education, and outreach in defense materials and energy manufacturing, IAM aims to be a key center for manufacturing innovation, driving advancements that meet societal and technological needs.



Services

- Manufacturing workforce training
- Tech-driven business development
- Shared manufacturing research shop
- Technology demonstration
- Technology transfer and support
- Pilot production facilities

Research Partners

- National Laboratories: Oak Ridge National Laboratory, Los Alamos National Laboratory, Army Research Laboratory
- Honeywell, Raytheon, Boeing, Corpus Christi Army Depot
- America Makes, ARM Institute

Sponsors

- Department of Defense (DoD)
- Department of Energy (DoE)
- National Science Foundation (NSF)
- U.S. Economic Development Administration (EDA), and more.

Objective

To conduct research that addresses real-world challenges, focusing on defense materials, energy manufacturing, and systems.

Equipment

EOS M 290 Selective Laser Metal Additive Machine, High Deposition Laser Direct Energy Deposition Machine, Wire Arc Additive Manufacturing Machine, Femtosecond Laser Material Processing Center, and more.

Doctoral Program Contributions

The center engages Ph.D. students from the Material Science and Mathematics programs in its research, providing them opportunities to apply their academic knowledge to real-world advanced manufacturing projects. This involvement helps students develop professional skills while contributing to the center's research goals.

Education and Outreach

IAM is committed to educational excellence and community engagement in advanced manufacturing. Through targeted programs and outreach, the center aims to develop skilled professionals and expand knowledge of manufacturing innovations.

Research Focus

The center provides restructured research, education, and workforce development programs to prepare engineers and workers for advanced manufacturing processes and systems.

- Robotics and Industry Autonomy
- Energy and Semiconductor Manufacturing
- Cyber Manufacturing and Smart Systems
- Additive and Convergent Manufacturing



THE INDUSTRIAL TRAINING AND ASSESSMENT CENTER (ITAC)

Mission Statement

The Industrial Training and Assessment Center (ITAC) focuses on advanced energy research in manufacturing and water plants, emphasizing energy use and efficiency. Under the Infrastructure Investment and Jobs Act, the ITAC plays a key role in educating energy professionals and offering federally recognized certifications, supported by significant funding for energy efficiency implementation grants.



Alexander Domijan, Jr., Ph.D.
Director

Research Focus

The center specializes in energy and power systems, including energy efficiency, big data analytics, sustainability, interdependent critical systems, and power generation. Its focus ranges from smart grids to global energy markets, advancing competitive issues and investment strategies in the energy sector.

Research Partners

- Regional Economic Development Corporations
- Utility Companies
- Manufacturing Companies
- Water and Wastewater Treatment Plants
- South Texas Manufacturing Association
- Polytechnic University of Valencia
- Numerous federal agencies

Sponsors

ITAC has secured over \$3.4 million in funding, with projections for continued growth. Primary financial support comes from the U.S. Department of Energy's Office of Manufacturing and Energy Supply Chains (MESCC), ensuring long-term stability and growth.

Impact

ITAC is dedicated to conducting advanced research in energy that will support economic development and the practical application of energy technologies such as renewables, Virtual Power Plants, smart grids, microgrids, and energy efficiency measures. The center's activities are designed to:

- **Bring Resources:** Direct significant resources to the Rio Grande Valley and South Texas, extending from the RGV to El Paso, Corpus Christi, San Antonio, and Houston, to support regional development.
- **Educate and Train:** Increase graduate enrollment and prepare students for higher-paying jobs with career advancement opportunities, while helping industry partners reduce energy use and waste.
- **Foster Collaboration:** Create research teams within UTRGV and collaborate with external partners to secure funding and advance research goals.



Doctoral Programs Engagement

The center collaborates across UTRGV's academic programs, including Computer Science and Materials Science, and partners with all UTRGV Engineering Departments and the Polytechnic University of Valencia.

Achievements

- Conducted over 20,000 energy assessments nationwide
- Trained over 100 students
- Recommended an average annual savings of \$137,329 per energy study

Equipment and Facilities

ITAC is equipped to conduct comprehensive energy studies, including electric systems, heat and steam systems, compressed air, and water quality.

Services

The center provides energy studies for manufacturing and water enterprises to improve energy efficiency, productivity, and cost management, conducted by UTRGV students and faculty.

NANOTECHNOLOGY CENTER OF EXCELLENCE (NCE)

Mission Statement

The Nanotechnology Center of Excellence (NCE) aims to raise awareness of nanotechnology efforts, support faculty in establishing research careers, and promote collaboration within UTRGV to enhance research student engagement. The center also focuses on increasing diversity in Materials Science and Engineering by linking nanotechnology research with the recruitment, retention, and degree completion of students to increase student success and workforce readiness.



Victoria Padilla, Ph.D.
Director

Research Focus

The center specializes in the processing-structure-property relationships of nanoreinforced polymer composites and nanofiber systems, supporting advancements in electrical, biomedical, and other nanotechnology applications.

Research Partners

NCE collaborates internally at UTRGV, with the University of Minnesota (UMN) through the PREM grant, and with other research partners and sponsors.

Sponsors

NCE is primarily supported by the National Science Foundation (NSF) and is working to engage new sponsors, including the National Institutes of Health (NIH).

Milestone

Retention Excellence:

- Maintained a 100% retention and graduation rate for over 500 students involved in the center.

Fostering PhD Pursuits:

- Promoted graduate education, with 50 former members pursuing PhD degrees from Tier I institutions.

Pioneering PhD Program:

- Established the first PhD program in CECS, attributed to the center's efforts.

Honors and Achievements:

- Students and faculty have received numerous awards, including NSF Graduate Research Fellowships, a Fulbright Fellowship, and recognitions from STEM societies.

Resources and Services

The center offers Materials Science Characterization services, including SEM, XPS, thermo-physical analysis, electrical characterization, and additional resources for the research community.

Collaborations

NCE receives support through collaborations at UTRGV, the University of Minnesota (UMN) via the PREM grant, and other research partners and sponsors.

Doctoral Program Contributions

NCE integrates doctoral students from the Materials Science and Engineering program into its research projects, helping shape the next generation of nanotechnology experts. This involvement underscores the center's commitment to educational excellence and develops professionals ready to lead in the field.



UNIVERSITY TRANSPORTATION CENTER FOR RAILWAY SAFETY (UTCRS)

Mission Statement

The University Transportation Center for Railway Safety (UTCRS) focuses on developing knowledge, skilled workforce, and technology to improve safety in the U.S. rail transportation industry. Through partnerships and resources, the center supports rail safety research, education, technology transfer, implementation, and workforce development. The center's goals include reducing accidents, fatalities, and economic losses, as well as fostering new safety technologies.



Constantine Tarawneh, Ph.D.
Director

Collaboration and Support

- Partners: University of Nebraska-Lincoln, University of South Carolina, Texas A&M University, University of California Riverside, Class I railroads, local school districts, and federal agencies such as the National Transportation Safety Board and Federal Railroad Administration.
- Sponsors: U.S. Department of Transportation, National Science Foundation, National Laboratories, private industry, and local foundations.

Facilities and Services

UTCRS features advanced railroad bearing testing labs and extensive mechanical and electronic fabrication capabilities. It provides public access to bearing testers and offers various education and research programs, including Research Experience for Undergraduates, Research Experience for Teachers, and STEM camps, serving as a resource for researchers and the community.

Strategic Goals

- Minimizing fatalities and injuries at highway-rail grade crossings.
- Enhancing material and system reliability to reduce failures.
- Innovating infrastructure and rolling stock monitoring technologies.
- Developing advanced safety assessments and decision-making tools.
- Simplifying rolling stock component repairs with new technologies.

Milestones

- Licensed sensor technologies for rail condition monitoring.
- Hosted large-scale STEM camps, engaging thousands of students and teachers.
- Provided research opportunities for students at various academic levels.
- Focused research on mitigating freight rail service derailments.
- Collaborated with local school districts for year-round educational programs.

Interdisciplinary Doctoral Research

- Collaboration with NSF CREST MECIS: Partnering with the National Science Foundation's Center for Multidisciplinary Research Excellence in Cyber-Physical Infrastructure Systems.
- Funding for Doctoral Students: Provides support to doctoral students in Computer Science, Material Science and Engineering, Physics, and Teaching & Learning.
- Comprehensive Approach: Highlights UTCRS's commitment to rail safety research and education through interdisciplinary support and strategic partnerships with key rail industry stakeholders.



Research Areas

- Railway Mechanical Systems
- Railway Operation Systems
- Railway Infrastructure Systems

TEXAS MANUFACTURING ASSISTANCE CENTER (TMAC)

Mission Statement

Texas Manufacturing Assistance Center (TMAC) is dedicated to enhancing the growth and competitiveness of companies by improving profits, products, processes, technologies, and people. TMAC offers affordable technical, management, consulting, and training services to boost company performance across Texas. The center leverages its affiliation with the Manufacturing Extension Partnership (MEP) and partner institutions to deliver cost-effective services that help businesses grow, increase profits, improve management systems, adopt new technologies, develop skilled workforces, and be environmentally responsible.



Jose David Ortiz
Director

Current and Past Sponsors

- UT-Arlington (Prime recipient of NIST/MEP Program, Department of Defense, and State of Texas funding)
- UTRGV College of Engineering and Computer Science (State line item)
- Workforce Solutions (SDF and State funds)
- Department of Energy via the US-México Foundation for Science (FUMEC/USMFS)

Doctoral Programs Contribution

TMAC supports industry-based projects in Advanced Manufacturing for graduate and doctoral programs.

Services

The center provides consulting and training in manufacturing best practices, processes, management, workforce development, and advanced manufacturing.

Facilities

Most TMAC projects are delivered at manufacturers' facilities, with training sessions held in UTRGV classrooms and conference rooms.

Achievements

- TMAC was awarded \$1.46M for two years (July 1, 2023 – June 30, 2025), with an additional \$350K in program income for the same period.
- Regional Economic Impact (2020-2021):
 - 65 manufacturers served
 - Increased/retained sales: \$50M
 - Increased/retained jobs: 1,800
 - New client investments: \$12M
 - Cost savings: \$10M

Research Partners

- National Network: MEP Centers, National Institute of Standards and Technology (NIST)
- Regional Economic Development Corporations: Edinburg EDC, Pharr EDC, City of Pharr, Pharr International Bridge, McAllen EDC, McAllen International Airport, Brownsville Community Improvement Corporation (BCIC)
- TMAC Centers: UT-Arlington, UT-El Paso, UH Clear Lake, Lamar University, Texas Tech, Southwest Research Institute (SwRI), Texas A&M Extension Service (TEEX)
- Regional Higher Education: Universidad Autónoma de Nuevo León (UANL), Tecnológico de Monterrey (ITESM)
- Local Education Organizations: South Texas College, RGV Focus, PSJA ISD, Region One
- Industry Associations: South Texas Manufacturing Association (STMA), Asociación de Empresarios Mexicanos (AEM), The Council for South Texas Economic Progress (COSTEP), Rio Grande Valley Partnership
- UTRGV Affiliations: College of Engineering, Institute for Advanced Manufacturing (IAM), Division of Research, Governmental Relations and Economic Development, Entrepreneurship and Commercialization Center (ECC), Small Business Development Center (SBDC), College of Business, Center for Innovation and Commercialization (CIC)

Projects

- Noble Texas Builders: Designed and analyzed the estimating, construction, and closing processes for their Building Solutions, Large-Projects, and Commercial divisions.
- Key Partnerships: Facilitated commercial missions to Monterrey, Guadalajara, and Mexico City.
- Red Sun Farms: Implemented projects resulting in estimated annual savings of \$3M.
- City of Pharr: Deployed a 5-year strategic plan with key performance indicators.
- TRANCASA: Identified budget cost reduction opportunities of approximately \$6M for 2024.
- Emerson Tooling: Enhanced storage space and labor efficiency through picking cell automation simulation.
- MorMedical: Supported ISO 9001:2015 compliance for market expansion.
- Knapp Medical Foundation: Improved processes to support \$5M per year in philanthropic grants.
- Pharr International Bridge: Developed a strategic plan for 2024-2027, targeting a 3.5% annual revenue increase.

Locations

Brownsville: UTRGV Entrepreneurship and Commercialization Center, 304 E Adams St, Brownsville, TX 78520

McAllen: MRIOB 5.555, 701 E Expressway 83, McAllen, TX 78501

Temporary Address - Edinburg: EASFC, 1201 West University Dr, Edinburg, TX 78539



CENTER FOR BROADENING PARTICIPATION IN ENGINEERING (CBPE-E): ENGAGE, EDUCATE, ENRICH

About CBPE-E3

The Center for Broadening Participation in Engineering (CBPE-E), funded by the U.S. National Science Foundation (NSF), is part of the College of Engineering's efforts to increase the enrollment, retention, and advancement of Hispanic students, particularly Latinas, in engineering. The center aims to address inequities in the engineering career continuum and transform the education and preparation of the next generation of engineers.



Ala Qubbaj, PhD
Director

Mission Statement

The center's mission is to increase the participation and success of Hispanics in engineering careers, ultimately strengthening the U.S. engineering workforce and competitiveness in STEM. The center addresses inequities in the engineering career continuum through three key areas:

- **ENGAGE** (K-12 Outreach): Early exposure to engineering content and role models.
- **EDUCATE** (Education & Training): Inclusive engineering education and promoting student success.
- **ENRICH** (Professional & Research Experiences): Early professional exposure and research opportunities.

Vision

The vision of CBPE-E is to be a national model for inclusion, professional preparation, and the success of Hispanic and other underrepresented minority students, particularly Latinas, in engineering careers.

Achievements

- Established partnerships with K-12 schools, community colleges, industry, national labs, and professional organizations.
- Launched the inaugural Broadening Participation in Engineering Summit and the Engineering Student Leadership Academy.
- Increased student engagement in professional development activities, including professional organizations, conferences, internships, co-ops, undergraduate research, and career development.
- Enhanced student retention and academic success through initiatives like the Freshman Jumpstart Bootcamp and curriculum revisions.

Research Partners

Federal Agencies and National Laboratories:

- White House Initiative on Educational Excellence for Hispanics
- Idaho National Laboratory (INL)
- Los Alamos National Laboratory (LANL)
- Oak Ridge National Laboratory (ORNL)

Educational Institutions:

- Region One ESC
- South Texas College (STC)

Professional Engineering Societies:

- American Society for Engineering Education (ASEE)
- Society of Hispanic Professional Engineers (SHPE)
- Society of Women Engineers (SWE)
- American Society of Civil Engineers (ASCE)
- Texas Board of Professional Engineers and Land Surveyors (PELS)
- National Society of Professional Engineers (NSPE-TX)

Industry Partners:

- Boeing
- General Motors
- Raytheon Technologies
- Applied Materials

Services

- Community and K-12: Initiatives such as Familia ENGAGE, Latina Camps, Community College ENGAGE, Teachers and Counselors Forum, and the High School Engineering Scholars Program (HSESP).
- Faculty: Curriculum revisions, faculty training on inclusive teaching, and the Equity in Engineering Education Summit.
- College Students: Connections with professional engineering organizations, leadership development through the Engineering Student Leadership Academy, and professional and career development programs.

Research Focus

The center's research initiatives focus on enhancing and refining knowledge about broadening participation in engineering, particularly regarding the factors that facilitate or hinder the success of Hispanic students, especially Latinas. Key research areas include:

- Understanding the recruitment and retention of Hispanic students in engineering.
- Evaluating the effectiveness of mentoring and role models.
- Investigating culturally relevant pedagogy and its impact on student success.

Sponsor

The U.S. National Science Foundation (NSF)



CENTER FOR LATIN AMERICAN ARTS (CLAA)

Mission Statement

The Center for Latin American Arts (CLAA) is dedicated to advancing scholarship, performances, and exhibitions of arts, with a focus on Latin American cultural traditions. As a hub for collaboration, the Center promotes the arts through teaching, scholarship, performance, and creative works. Its mission is to connect traditions significant to communities in the Rio Grande Valley and beyond, fostering a shared sense of Latin American and Iberian cultural heritage that transcends borders.



Katherine McAllen, Ph.D.
Director

Current and Past Sponsors

- Alice Kleberg Reynolds Foundation
- Raul Tijerina, Jr. Foundation
- Hollyfield Foundation
- Rea Charitable Trust at Wells Fargo
- Vanderbilt University
- The Brown Foundation
- Rea Charitable Trust at Wells Fargo
- Vanderbilt University
- H-E-B

Achievements

- Hosted the "Uncovered Spaces" exhibition at the International Museum of Art and Science (IMAS).
- Secured over \$150,000 in grants last year.
- Published a two-volume bilingual publication with the University of California Press (2021-2022).
- Presented international concerts featuring dancers from Spain and Mexico, available on the CLAA YouTube Channel.

Core Values

CLAA is dedicated to community engagement, excellence in scholarship, art production, and performance. The Center emphasizes student success by providing unique learning opportunities both on and off campus.

Research Focus

The center supports the publication of academic scholarship and the creation of exhibitions and performances across a diverse range of arts, including:

- Music
- Theatre
- Dance
- Creative writing
- Art
- Art history

Research Partners

- Catholic Charities of the Rio Grande Valley
- IMAS Museum
- McNay Art Museum
- Museo de Arte Lima
- Opera San Antonio
- San Antonio Museum of Art
- Sister Norma Pimentel
- The University of Texas Archer Center
- University of California Press
- Vanderbilt University's Center for Latin American and Caribbean Studies

Locations

Brownsville: BMSLC 2.210, One West University Blvd., Brownsville, TX 78520

Edinburg: ELIBR 2.114, 1201 West University Dr., Edinburg, TX 78539



Services

- Performances
- Scholarly lectures in the arts
- Art exhibitions
- Plays
- Registration events to boost enrollment and recruit students

Facilities

CLAA operates from the 2nd Floor of the UTRGV Edinburg Campus Library, serving as a gathering space for lectures, symposia, and exhibitions.



CENTER FOR VECTOR BORNE, ZOO NOTIC, AND EMERGING DISEASES (CVBZED)

Mission Statement

The Center for Vector Borne, Zoonotic, and Emerging Diseases (CVBZED) is dedicated to advancing research on vectors and vector-borne diseases. It focuses on providing educational and research opportunities for students while serving as a key resource for community education and expertise on vector-borne diseases.



Christopher Vitek, Ph.D.
Director

Research Focus

CVBZED's research emphasizes the biology of vectors and vector-borne diseases, with a particular focus on South Texas, a region significantly impacted by these diseases. The Center aims to deepen understanding of disease mechanisms, vector biology, and transmission cycles.

Achievements

- Sponsored guest speakers and student research symposia.
- Funded student travel for research presentations at conferences.
- Developed public community education seminars and a graduate certificate in Vector-Borne Diseases.
- Supported UTRGV's COVID emergency response and the establishment of the UTRGV Health Diagnostic Laboratory.

Research Partners

- Western Gulf Center for Vector-Borne Disease at The University of Texas Medical Branch (UTMB): Funded by a 5-year grant from the Centers for Disease Control and Prevention (CDC) for 2017-2022. Funding for additional grants from the CDC, in partnership with UTMB and Texas A&M University, was submitted but not funded.
- Texas Department of State Health Services: Collaborating to provide services and directed research related to their goals and aims.
- Local Public Health and Vector-Control Entities: Working with city and county level organizations to offer guidance or support through consultation and applied research for improved surveillance and control efforts.
- United States Department of Agriculture (USDA) Moore Air Force Base: Partnering to provide student research opportunities, particularly focusing on vector-borne diseases of plants and animals.



Current Funding

The center oversees five active research awards from the United States Department of Agriculture (USDA) and is actively seeking enhanced direct funding to expand its operations. There is an opportunity to grow faculty research in vectors and vector-borne diseases, with specific agencies and partners to be identified by the director to further support these initiatives.

Doctoral Programs Contribution

CVBZED is preparing to engage in the UTRGV School of Integrative Biological and Chemical Sciences doctoral program, complemented by existing contributions from faculty within the Mathematics department and the School of Medicine's Department of Human Genetics.

Services

- Funding for publications and a new pilot study award starting Fall 2024 to promote research.
- Training students for careers in public health, vector studies/management, emerging pathogens, and vector-borne and zoonotic diseases.
- Public seminars on vector and vector-borne diseases.
- Engagement with the public and media to disseminate information on vector-borne diseases.

Equipment and Facilities

CVBZED is a multi-disciplinary center with varying equipment needs. Efforts are underway to develop a core facility that will include a PCR machine and a Kingfisher DNA/RNA extractor.



CENTER FOR SUSTAINABLE AGRICULTURE AND RURAL ADVANCEMENT (SARA)

Mission Statement

The UTRGV Center for Sustainable Agriculture and Rural Advancement (SARA) enhances agricultural sustainability and fosters the development of rural communities in South Texas through collaborative efforts involving UTRGV students, faculty, and community partners. Through multidisciplinary research, education, and outreach initiatives, SARA strives to address the complex challenges facing agricultural systems while promoting the well-being of rural populations and the environment.



Colin Cain
Director

Research Focus

SARA supports community-engaged research that emphasizes environmental, economic, and social strategies to enhance agricultural and rural sustainability. Through collaborative efforts with local stakeholders, SARA seeks to address pressing challenges and explore innovative solutions to promote the resilience and vitality of agricultural systems and rural communities in South Texas.

Achievements

The center has made significant progress over the past 5 years by establishing a participatory platform to promote sustainable agricultural practices. The center has assisted over 20 growers with organic certification and provided mentorship and training to more than 180 new farmers. These efforts have led to the adoption of sustainable practices by over 300 farms and ranches, including cover cropping and reduced tillage. SARA has also facilitated new marketing opportunities for South Texas producers, strengthened the regional food supply chain, and offered valuable professional experience to UTRGV students. Additionally, SARA conducted a comprehensive food access study and proposed policy recommendations for the State of Texas.

Research Partners

Non-profit and Community-based Organizations

- National Center for Appropriate Technology (NCAT)
- Proyecto Desarrollo Humano (PDH)
- People Fund (PF)
- La Semilla (LS)
- Feeding Texas (FT)
- Texas/Mexico Border Coalition (TMBC)
- Brownsville Wellness Coalition (BWC)
- Food Bank of Rio Grande Valley (FBRGV)
- Texas Center for Local Food (TCLF)
- National Cooperative Business Association (NCBA)
- Austin Cooperative Business Association (ACBA)
- Senti Center (SC)
- Texas Small Farm and Rancher CBO (TSFR-CBO)
- California Commission of Organic Farmers (CCOF)

Universities

- Texas A&M University (TAMU)
- Texas State University (TSU)
- Purdue University (PU)
- Baylor University (BU)
- University of Texas Health System (UTHS)
- UC Davis (UCD)

Equipment and Facilities

Specialized Equipment

- LI-COR LI-7810 and LI-7820 Trace Gas Analyzers
- John Deere 3038e tractor
- Kioti LK3054 tractor
- BCS 750 tractor
- SARA Agricultural Conservation Mobile Unit
- SARA Education Mobile Unit
- Dually Truck
- Various specialized farming equipment and implements

Facilities

- Hub of Prosperity Farm
- Outdoor Education Pavilion
- SARA Offices at CESS (scheduled for renovation)

Services

For Researchers

- Pre-proposal Support: Partner identification, proposal development, review, scoring criteria alignment, logic modeling, and budgeting.
- Partner Engagement: Agricultural and rural community partner management.
- Participant Outreach: Recruitment and outreach for project participants.
- Marketing and Outreach: Project outreach and marketing plan implementation.
- Research Dissemination: Community-focused research dissemination venues.
- Grants Administration: Assistance with grants administration.
- Meeting and Training Space: Off-campus space for meetings and training.

For Community

- Educational Conference: Annual conference for South Texas farmers and ranchers.
- Farmer Support: Training, mentoring, and incubation for beginning farmers.
- Business Development: USDA program support and business development for farmers and ranchers.
- Cooperative Assistance: Development support for rural and agricultural businesses.

Current and Past Sponsors

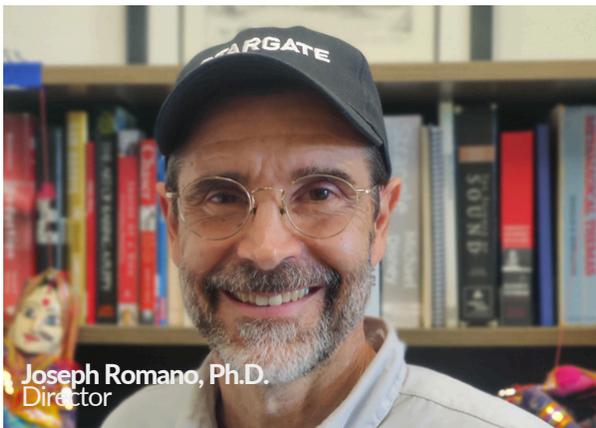
- USDA-National Institute of Food and Agriculture
- USDA-Office of Partnerships and Public Engagement
- USDA-Rural Development
- USDA-Agricultural Research Service
- USDA-Agricultural Marketing Service
- USDA-Natural Resources Conservation Service
- Texas Department of Agriculture
- W.K. Kellogg Foundation
- City of Austin, Texas
- H.E.B.



SOUTH TEXAS SPACE SCIENCE INSTITUTE (STSSI)

About STSSI

The South Texas Space Science Institute (STSSI), under the Division of Research, integrates the interdisciplinary strengths of various departments to focus on space science education and research. It was formed from the merger of two former UTRGV centers—the Center for Gravitational Wave Astronomy (CGWA) and the Center for Advanced Radio Astronomy (CARA). Both centers made significant contributions to the field, including the Nobel Prize-winning detection of gravitational waves in 2015.



Mission Statement

STSSI is to inspire curiosity and innovation in space science through comprehensive education and cutting-edge research.

Vision

STSSI envisions a future where research, education, and outreach in space sciences enhance regional access to STEM careers and promote greater scientific literacy.

Impact

Among STSSI's primary focuses is to increase the number of STEM degree recipients by preparing a skilled workforce for the space technology development sector in the lower Rio Grande Valley and beyond.

Research and Education

Building on the foundations of CGWA and CARA, STSSI conducts interdisciplinary research across Astrobiology, Astronomy, Astrophysics, Data Analysis, Machine Learning, Planetary Sciences, and Space Technology and Business. The institute also engages with fields such as Engineering, Materials Science, and Space Medicine to develop Master's and PhD programs in the space sciences, aiming to produce graduates who are well-prepared for the space science industry.

Engagement

STSSI engages the community through workshops, visitor programs, and public outreach. By collaborating with institutional and regional partners, the institute strengthens the STEM ecosystem, providing students with opportunities to participate in research and interact with mentors and experts in the field.

Public Outreach

STSSI collaborates with the Brownsville-based nonprofit South Texas Astronomical Society (STARS) for outreach initiatives. STARS aims to spark curiosity, inspire exploration, and support the community through space science and STEM education. Key programs include:

- **Astronomy at the Park:** Stargazing events at UTRGV's Cristina Torres Memorial Observatory at Resaca de la Palma State Park.
- **Generation Artemis:** Engaging students with NASA's Artemis Program through camps and STEM events.
- **Cosmic Conversations:** Presentations by STSSI students and professors at public venues.
- **FarFarOut! Science Magazine:** A publication that educates the public about space sciences.
- **NASA SEES Internships:** Opportunities for local high school students to join the NASA STEM Enhancement in Earth Science summer internship program.
- **Launchpad:** A rocketry workshop for high school students.



CENTER OF EXCELLENCE IN STEM EDUCATION (C-STEM)

About C-STEM

The Center of Excellence in STEM Education (C-STEM) supports students across K-12, undergraduate, and graduate levels interested in Science, Technology, Engineering, and Mathematics. The center promotes exploration of STEM careers and enhances understanding of STEM disciplines through activities such as presentations, hands-on activities, and educational films on topics including the International Space Station, paleontology, and the Arctic.



Cristina Villalobos, Ph.D.
Director

Vision

C-STEM is committed to enhancing STEM academic programs and increasing the number of STEM graduates. The center offers academic and professional development resources to prepare students for careers in the STEM fields and raises awareness of STEM opportunities through resources and hands-on activities for K-12 students in local school districts.

Research

C-STEM provides diverse research opportunities to support significant educational and professional development for students. This includes programs such as the Science Undergraduate Laboratory Internships (SULI), MIT Summer Research Program, and various Research Experiences for Undergraduates (REUs) in fields like Mathematics, Engineering, Science, and Technology. These programs connect students with national laboratories, leading universities, and industrial projects, offering experiences in areas from computational biology to environmental science. These opportunities aim to deepen participants' understanding of scientific research and prepare them for advanced careers in STEM fields.

Doctoral and Educational Programs

The Center offers professional development workshops for college students to better prepare them for their academic, career, and professional careers. Twice weekly workshops are offered in-person and via videoconference on topics such as graduate school, fellowships, career panels, and internships. These workshops contribute to students' awareness of resources and opportunities for graduate studies.

Sponsors

The Center has worked with faculty's grant projects from NASA, USDA, and the NSF. The Center was established in 2011 through a \$3M grant from the U.S. Department of Education HBCU/MI program.

Facilities and Equipment

- Mobile Laboratory: Delivers a comprehensive science experience throughout the Rio Grande Valley, designed to stimulate intellectual curiosity and highlight the benefits of higher education in both STEM and non-STEM fields.
- UTRGV Planetarium and Portable Planetarium: Utilizes advanced visualization technologies, surround sound, and specialized equipment to enrich learning experiences for our students, faculty, and broad community members.
- Classroom Spaces: Provides various learning environments across the UTRGV campus, equipped with essential technological and educational resources to support effective teaching and learning.

Services

- Provides targeted workshops designed to equip students with essential skills and knowledge for career advancement in STEM fields.
- Offers access to a range of research programs, connecting students with innovative projects and leading researchers.
- Facilitates participation in conferences for presenting research and networking with academic professionals.
- Includes various scholarships specifically for students pursuing STEM education.
- Provides fellowships to support graduate students in their advanced studies and research.



Achievements

- Fellow, American Mathematical Society
- 2020 PAESMEM Award, White House and NSF
- 2024 Gweneth Humphreys Award, Association for Women in Mathematics
- 2020 SACNAS Presidential Award for Service
- 2019 Richard A. Tapia Achievement Award
- 2016 Outstanding Latino/a Faculty Award, American Association of Hispanics in Higher Education
- 2013 UT Board of Regents' Outstanding Teaching Award
- 2013 SACNAS Distinguished Undergraduate Mentor Award
- 2012 HENAAC Great Minds in STEM Luminary Honor

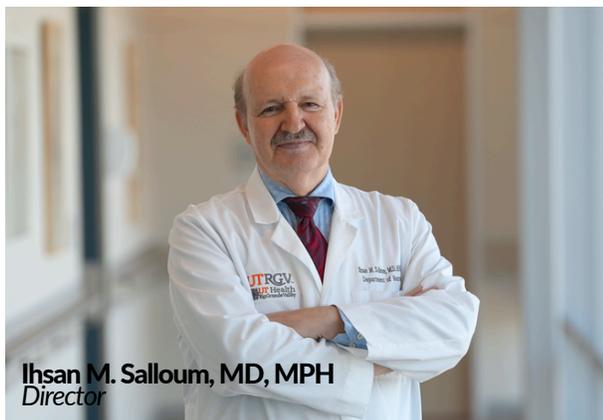
INSTITUTE OF NEUROSCIENCE (ION)

Vision

The Institute of Neuroscience (ION) aims to transform brain health in the Rio Grande Valley by driving excellence in research, education, clinical care, and community partnerships. The ION seeks to be a catalyst for multidisciplinary and interdisciplinary advancements that enhance brain health and well-being.

Sponsors

- National Institutes of Health (NIH)
- Texas Alzheimer's Research and Care Consortium (TARCC)
- Department of Defense (DoD)



Ihsan M. Salloum, MD, MPH
Director

About ION

ION is a leading institute for brain health education, research, and personalized treatment, serving the Rio Grande Valley (RGV). The institute aims to enhance brain health and reduce the impact of brain diseases in the region by:

- Studying the determinants and mechanisms of brain health and illness.
- Accelerating the adoption of innovative interventions.
- Educating future leaders in neuroscience.
- Engaging the community to reduce health disparities and prevent brain diseases.

Research Partners

- University of Chicago
- Columbia University
- UT System
- University of Leuven
- Johns Hopkins Medicine
- Other global institutions

Research Focus

- Neuropsychiatric disorders, including substance use, depression, and bipolar disorders.
- Alzheimer's disease and age-related conditions.
- Neurorehabilitation and stroke recovery.
- Genetics and neuroscience of various mental health conditions.
- Digital healthcare solutions and innovations in biomedicine, including AI and machine learning.

Achievements

- Conducted high-impact research that has contributed to national and international guidelines.
- Discovered novel genetic findings that enhance the understanding of brain development and disease.
- Developed groundbreaking pharmacological approaches for treating neuropsychiatric disorders.

Clinical Trials and Research

In addition to treating neurological issues, ION scientists engage in multidisciplinary research to deepen the understanding of brain functions and mechanisms impacting brain health. Research efforts include:

- Conducting clinical trials for experimental treatments for Alzheimer's disease and stroke recovery.
- Exploring innovative approaches in neuroscience and neurorehabilitation.
- Involving medical students in research activities to enhance their education and practical experience.

Doctoral and Educational Programs

ION is committed to training the next generation of neuroscience leaders for the RGV region and beyond. The institute offers high-quality professional and graduate degree programs in biomedical sciences and contributes to programs in Human Genetics, Clinical Psychology, Business Administration, and more. Emphasis is placed on involving students in cutting-edge experience and advanced education.

Facilities and Equipment

- **State-of-the-Art Clinical Research Unit and Neuroscience Laboratories:** Equipped with advanced technologies for conducting cutting-edge research and clinical studies.
- **Neuroimaging Suite:** Includes T3 MRI and PET/CT scans for comprehensive brain imaging and analysis.
- **Advanced Laboratories:** Dedicated spaces for neurorehabilitation and neuromodulation research.
- **Computational and Data Analysis Resources:** Extensive facilities including AI platforms for advanced data analysis and research applications.

Services

- **Community Outreach and Public Education:** Programs focused on raising awareness and providing information on brain health.
- **Multidisciplinary Collaborations and Technical Support:** Assistance and partnership opportunities for researchers across various disciplines.
- **Training and Mentorship:** Programs offering guidance and support to students and professionals in neuroscience and related fields.

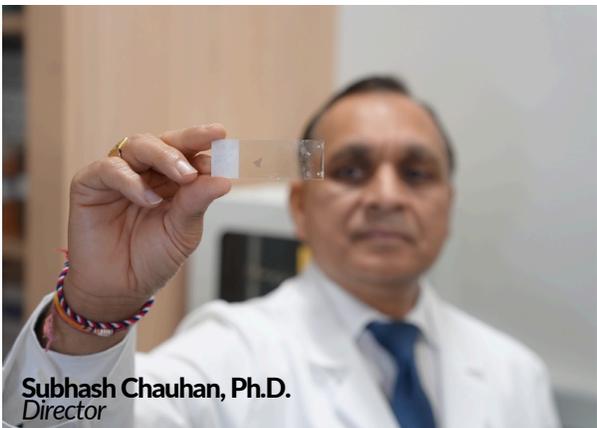
SOUTH TEXAS CENTER OF EXCELLENCE IN CANCER RESEARCH (ST-CECR)

About ST-CECR

The South Texas Center of Excellence in Cancer Research (ST-CECR), established in 2019 by the UTRGV School of Medicine, focuses on addressing cancer-related health issues affecting Rio Grande Valley (RGV) residents and developing a premier facility for cancer research. Located within the 80,000 square-foot Biomedical Research Building, the center is equipped with advanced core facilities and infrastructure to support a broad range of cancer research initiatives.

Mission Statement

ST-CECR's mission is to drive innovative scientific discoveries, reduce cancer-related health disparities in the Rio Grande Valley, and enhance the quality of patient care, establishing itself as a leader in cancer research.



Subhash Chauhan, Ph.D.
Director

Educational Impact

ST-CECR offers training programs for PhD students and clinician scientists, equipping them for successful careers in cancer research. Graduates have opportunities to join prestigious labs and receive specialized training through post-doctoral work and fellowships.

Research Focus

- Investigating the high incidence rates of liver, gall bladder, stomach, and cervical cancers in the RGV.
- Examining the complex interplay of genetic, molecular, socioeconomic, and behavioral factors contributing to these disparities.
- Developing innovative cancer diagnostics and therapeutics tailored to the region's unique needs.

Achievements

- Establishment of a CPRIT-supported research facility dedicated to addressing cancer health disparities.
- Formation of a cohesive, multidisciplinary team conducting transdisciplinary research.
- Anticipated national and international recognition through publications and presentations.

Facilities and Equipment

- Flow Cytometry and CyTOF: Used for cell analysis and sorting.
- Image Stream Flow and Droplet Digital PCR: Employed for detailed molecular analysis.
- Molecular and MicroPET/CT Imaging: Provides in-depth imaging studies of cancer.
- Antibody Drug Conjugates and Nanoparticle Therapies: Focuses on developing targeted cancer therapies.
- Cancer Immunotherapy Research: Supports studies on new treatments and tumor environments.

Impact

SST-CECR will transform the RGV and South Texas by advancing cancer understanding, detection, diagnosis, treatment, and prevention, specifically through:

- Developing a unique research facility focused on improving cancer prevention, detection, diagnosis, and survivorship.
- Conducting and supporting research on cancer and health disparities across the RGV, South Texas, and nationally, to expand scientific knowledge and enhance public health.
- Promoting innovative research driven by the needs of South Texas.
- Supporting education and training in basic and clinical cancer research through scientific training, fellowships, and career awards.
- Collaborating with all sciences divisions at UTRGV to enhance cancer research efforts.
- Partnering with local cities, philanthropic organizations, industry, federal agencies, and other institutions to advance cancer research and training programs.



SOUTH TEXAS DIABETES AND OBESITY INSTITUTE (STDOI)

Mission Statement

The South Texas Diabetes and Obesity Institute (STDOI) was established on October 13, 2014, to focus on world-class biomedical research. With diverse research efforts in diabetes, obesity, and related disorders, STDOI aims to address critical public health issues in the South Texas region. Building on a long history of work with wide range of populations at the national and international levels. STDOI scientists are dedicated to reducing health disparities in the Rio Grande Valley and improving global health.



Sarah Williams-Blangero, Ph.D.
Director

Vision

- Build a global center for research on the genetic and environmental factors influencing diabetes, obesity, and related disorders.
- Conduct innovative research on health disparities and border health issues.
- Make discoveries that will lead to new cures and treatments, improving health in South Texas and worldwide.
- Create state-of-the-art resources and capabilities to support research on diabetes, obesity, and related disorders.

Current and Past Sponsors

- National Institutes of Health
- Valley Baptist Legacy Foundation
- Knapp Community Care Foundation

Doctoral and Educational Programs

The Division of Human Genetics offers a research intensive, four-year Ph.D. Program in Human Genetics. The program accepts seven students per year. The faculty and students in the program conduct their research in the STDOI laboratories.

Achievements

- Funding: Secured over \$110 million in grant awards since the institute's founding.
- Publications: Contributed to over 400 publications in peer-reviewed journals.

Research Focus

- Genomic Approaches: Analyzing genetic variations and their associations with disease risk.
- Proteomic Approaches: Studying protein expression and function related to disease mechanisms.
- Metabolomic Approaches: Investigating metabolic changes and their links to health outcomes.
- Transcriptomic Approaches: Examining gene expression patterns and their impact on disease.
- Exposomic Approaches: Assessing the effects of environmental exposures on health.

Research Projects

- Assessing genotype-by-environment interactions influencing age-related hearing loss and cognitive decline.
- Investigating genetic determinants of risk for Alzheimer's disease.
- Exploring the interactive effects of genetics and SARS-CoV-2 infection on cognitive decline and dementia risk.
- Examining the influence of the human lipidome on diabetes risk in the presence of regional factors.
- Studying genotypic effects on fatty liver disease risk and investigating the impact of regional factors.
- Analyzing the role of pollutants and environmental exposures in disease risk for fatty liver and major depressive disorder.
- Conducting imaging genomics research on the aging brain.

Research Partners

- Whole Genome Sequencing
- Transcriptomics
- Proteomics
- Metabolomics
- Methyloomics
- Exposomics
- Induced Pluripotent Stem Cell Generation and Differentiation
- Statistical Genetics
- Bioinformatics
- Genetic Epidemiology
- Pedigree Reconstruction
- Human Magnetic Resonance Imaging

Services

- Weekly Update Newsletter
- Monthly Lunch and Learn Sessions
- Bimonthly Seminars
- Jean MacCluer and Bennett Dyke Endowed Lectureship Series
- Genomic Research Success Program (GRSP) Training in Grantsmanship
- Outreach to Community for Health Promotion



HUMAN MOBILITY INSTITUTE (HMI)

Mission Statement

The Human Mobility Institute (HMI) is a leading resource center dedicated to assisting organizations focused on helping individuals in mobility. Founded on four core pillars—service, education, development, and research—HMI strives to empower organizations throughout the southern United States to deliver exceptional service and address the unique challenges faced by individuals in mobility.

Research Focus

The institute's research primarily addresses issues related to human displacement. This includes studying refugees and asylum seekers, victims of human trafficking (both labor and sex trafficking), seasonal and migrant farm workers, and individuals affected by forced displacement due to violence, war, climate change, or development. The focus of this research extends from the Rio Grande Valley to broader regions.

Doctoral Programs Contribution

The School of Social Work is establishing an international Ph.D. Program, with the HMI playing a central role in facilitating and supporting the research activities of these doctoral students.



Lauren Serafy
Director

Achievements

HMI prides itself on engaging and partnering with community agencies and HMI-affiliated faculty, addressing community issues by identifying research and service needs and fostering collaboration between UTRGV and the community.

Services

- Connecting researchers interested in human mobility across local, state, national, and international levels.
- Conducting outreach to organizations working with individuals in conditions of human mobility and offering additional services and professional development opportunities.
- Collaborating with community partners to develop workshops and educational opportunities to meet professional needs.
- Promoting capacity building within the community through education and training for organizations.
- Providing services based on community needs to promote the well-being and social and economic mobility of displaced populations and foster social justice.
- Offers trauma-focused mental health services, training, assessments, and referrals to individuals and families in conditions of human mobility.

Creating Sustainable Impact

HMI aspires to be a self-sustaining center of excellence, driving transdisciplinary collaborations and advancing the university's research and community engagement objectives.

Research Partners

- Proyecto Juan Diego
- Proyecto Desarrollo Humano
- Puentes de Cristo
- The Moody Clinic



MATERNAL HEALTH RESEARCH CENTER (MHRC)

About

The Maternal Health Research Center (MHRC) at the University of Texas Rio Grande Valley (UTRGV) addresses a critical public health issue—rising maternal morbidity and mortality rates. Funded through a federal award from the Department of Health and Human Services, Health Resources and Services Administration (HRSA), MHRC focuses on creating multidisciplinary research collaborations and fostering partnerships with community-based organizations to address maternal health disparities, and investigating the impact of regional factors.



Candace Robledo, Ph.D.
Director

Mission Statement

The UTRGV MHRC is committed to reducing health disparities by building regional capacity for community-engaged research. The center designs and evaluates evidence-based, community-centered solutions aimed at improving maternal health outcomes.

Research Focus

MHRC concentrates on maternal health research, working to reduce maternal morbidity and mortality through comprehensive research initiatives that engage both medical professionals and community stakeholders.

Facilities

The MHRC operates within the Division of Population Health & Biostatistics, Primary and Community Care Integrated Service Unit at the UTRGV School of Medicine in Harlingen, Texas.

Achievements

TMHRC conducted community-engaged research, drafting study protocols, establishing Memorandums of Understanding (MOUs), and collaborating with public health teams to identify research gaps. It has also implemented a Faculty Development Fellowship Program, partnered with regional organizations like the Brownsville Breastfeeding Coalition, and made advancements in two planned manuscripts.

Doctoral Programs Contribution

Psychology PhD students who will be a part of this year's research team by the way of developing and submission of a manuscript by end of Spring semester.

Research Partners

- UT Health School of Public Health
- South Texas Promotora Association
- City of Brownsville Maternal and Child Health Division
- Maternal Health Equity Research Collaborative (16 Minority Serving Institutions)
- Morgan State University Coordinating Center

Current and Past Sponsors

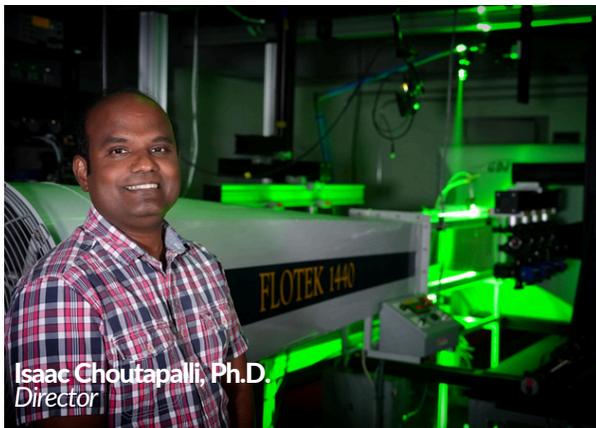
- Health Resources and Services Administration (HRSA)
- NIH Community Engagement Alliance (CEAL)



CENTER FOR AEROSPACE RESEARCH

About

The mission of CAR is to establish UTRGV as a preeminent leader in comprehensive aerospace education and research. Committed to advancing aerospace science. The center provides unparalleled educational and research opportunities for undergraduate and graduate students in fields such as microfluidics, aerodynamic coatings, and real-time data analysis using machine learning.



Isaac Choutapalli, Ph.D.
Director

Mission Statement

The Center for Aerospace Research (CAR) at the University of Texas Rio Grande Valley (UTRGV) is a leading multidisciplinary hub for aerospace education and innovation. Dedicated to advancing the frontiers of aerospace science, CAR's research encompasses aerospace vehicle design, propulsion systems, and cutting-edge aeromedical technologies. The center's research spans diverse disciplines, including computational fluid dynamics, microfluidics for boundary layer control, and aeromedical biotechnologies aimed at reducing the risk of aneurysm rupture in fighter pilots subjected to extreme aerodynamic stresses. By cultivating strong industry collaborations and providing exceptional educational opportunities, CAR prepares students for impactful careers in the global aerospace sector. With a focus on sustainability, innovation, and practical applications, the center is positioned to contribute both regionally and globally to the development of future aerospace technologies.

Achievements

The center is active in publishing journal papers and facilitating student-authored presentations in conference proceedings.

Facilities

CAR features several state-of-the-art laboratories:

- Aerospace/Aerodynamics Laboratory: Equipped with a subsonic wind tunnel and various advanced systems for particle tracking and imaging.
- High-Speed Propulsion Laboratory: Includes a supersonic jet propulsion facility and advanced PIV systems for propulsion research.
- Microfluidics Research Laboratory: Features high-speed cameras and pulsed lasers for microfluidics studies.
- Computational Fluid Dynamics Laboratory: Provides access to UTRGV's High Performance Computing Cluster and Texas Advanced Computing Center's Lonestar6 Cluster.
- AeroMedical Biotechnology Laboratory: Contains advanced imaging systems for biotechnological research.
- Drone Research Laboratory: Custom-built drones for research and development.
- Nanoparticle Coating Research Laboratory: Equipped with various high-speed imaging and analysis systems for nanotechnology research.

Doctoral Programs Contribution

CAR is positioned for impactful doctoral research and aims to attract candidates at national and international conferences, while encouraging current master's students to pursue PhDs.

Research Partners

CAR collaborates with partners including the Air Force Research Laboratory, Office of Naval Research, and Boeing Commercial Airplanes, enhancing its research capabilities.

Current and Past Sponsors

- Air Force Research Laboratory
- Office of Naval Research
- National Science Foundation



Research Focus

The six main areas of research at CAR include:

- Aerospace Vehicle Design and Advanced Propulsion Systems
- Computational Fluid Dynamics (CFD)
- Microfluidics and Aeroelastic Phenomena
- Drone Research and Machine Learning
- AeroMedical Biotechnology
- Nanoparticle Coatings for Aerospace/Aerodynamic Applications

MARINE ECOSYSTEMS INSTITUTE (MEI)

About

The Marine Ecosystems Institute (MEI), under the Division of Research, studies marine ecosystems, focusing on services vital to humanity, from food and climate regulation to renewable energy and economic value. MEI aims to promote integrative education, research, and community engagement across various sciences in alignment with UTRGV's mission to support sustainable development and community well-being.



Erin E. Easton, Ph.D.
Director

Mission Statement

To advance integrative education, training, research, and community engagement in marine ecosystems sciences.

Research Focus

MEI explores topics such as the impact and mitigation of climate forces and human activities, sustainable ecosystem management (e.g., Bahia Grande), and policy development for conservation and management.

Achievements

MEI faculty have expertise across disciplines, from oceanography to conservation and robotics, with a history of extramural funding. Current funding exceeds \$9.4 million, supporting numerous students and postdocs, advancing UTRGV's R1 goal, and enriching UTRGV's research portfolio. MEI collaborates with Sea Turtle Inc., South Texas Ecotourism Center, and the Texas Master Naturalist Program, among others, for conservation, education, and public engagement.

Facilities

- Port Isabel Laboratory
- Coastal Studies Laboratory

Services

The institute provides education, training, and community engagement to prepare individuals for marine-related careers and involvement in marine ecosystem conservation and restoration.

Doctoral Programs Contribution

MEI faculty support the PhD in Integrated Life Sciences and aim to develop a new PhD program within SEEMS.

Research Partners

- Texas General Land Office
- Texas Parks and Wildlife Department
- Texas Water Development Board
- Laguna Atascosa National Wildlife Refuge
- Friends of Laguna Atascosa
- US Fish and Wildlife
- National Oceanic and Atmospheric Administration
- Various Texas universities

