

INTEGRATED DESIGN INITIATIVE TASK FORCE

Background:

The UTSA College of Architecture, Construction and Planning (CACP) is a model for engaged learning, career readiness, and industry and community partnerships. CACP has increased UTSA's global connectivity as the leader in helping to establish our Urbino campus, hiring an internationally-renowned and experienced faculty, and creating sustainability-focused and culturally-responsive programs across UTSA's disciplines. Moreover, CACP faculty supply a crucial San Antonio workforce and contribute research, scholarship, and artistry that enhance and augment the local built environment. These strengths align with UTSA's destinations as a model for student success, a great public research university, and an exemplar for strategic growth and innovative excellence while supporting an Hispanic-serving mission and vision.

UTSA is committed to supporting an infrastructure that allows CACP faculty to build on past success and create new opportunities for growth, innovation, and excellence in these fields of study.

Architecture, construction, and planning professionals work in ***highly interdisciplinary fields***, such as seen in ***integrated project delivery*** in which all players in the design process collaborate to make decisions, assume risk, and optimize processes through all phases of design, fabrication, and construction. Design is motivated not only by creativity, artistic expression, philosophy, culture and history, but also is embedded in a context for execution that includes cost, performance, schedule constraints, and "client" level preferences shaped by psychological, social, and cultural influences. In their careers, urban planners also must collaborate with real estate and finance professionals, public policy makers, designers, geologists, ecologists, and sociologists, among others, to properly manage urban development. It follows that CACP faculty may seek to introduce new interdisciplinary elements into the education process to benefit students of the academy and prepare them for collaborative careers.

Indeed, research (Repko 2009, Kavaloski 1979, Newell 1990, Field et al. 1994) shows that interdisciplinary education can increase critical thinking, the recognition of bias, tolerance for ambiguity, and the acknowledgment and appreciation of ethical concerns. Through multidisciplinary academic programming and transdisciplinary research, ***CACP faculty are already responding to the industry trend of bringing together planners, policy makers, architects, engineers and construction and environmental scientists to address complex multifaceted challenges surrounding sustainability, low-impact development, and smart cities.***

Architecture programs around the world are recognizing these benefits and introducing interdisciplinary elements in their curricula such as biomimicry (Brownell 2016), which can be used to develop innovative designs that convey human and natural elements with functional elegance, while often inspiring the use of nontraditional building materials. Other innovative curricular elements have included computational tools, processes, and theories (MIT), geomatics (Delft University of Technology), media studies (Architectural Association School of Architecture London, UK), design engineering (Harvard and Cambridge), public affairs (Princeton), and manufacturing (University College London), to name a few. Architecture programs have also explored various administrative structures to maximize synergies and opportunities. For example the University of Pennsylvania and Harvard University are renowned programs that are housed in ways other than as Colleges in their university structure, and some programs are also housed with engineering disciplines (see <https://www.acsa->

arch.org/resources/data-resources/architecture-within-academic-institutional-structures/), in addition to those that include the applied arts. Likewise, construction programs accredited by the American Council for Construction Education count their administrative homes in a variety of colleges or school structures, including the Built Environment; Business; Architecture, Design and Arts, and Engineering, Science and Technology.

Being flexible with curricula and introducing innovative interdisciplinary elements helps to prepare architecture, construction, and planning graduates for **changing workforce demands** such as understanding integrated project delivery practices as described above, using virtual offices, gig workers, and technology. Research from PSMJ Resources found that 67% of Architecture/Engineering (A/E) firms currently allow remote working, with approximately half reporting that they currently have employees teleworking (Butcher 2017). These firms are faced with increased costs for computer hardware, software, and communications infrastructure, and their employees must be savvy with the technology. McKinsey and Forbes have found that between 22%-35% of the workforce is filled by independent workers (“giggers”), with pressures to stay abreast of current trends and technologies in order to maintain their marketability. It is apparent that **technology is interlaced throughout the acceleration of changes in the A/E workforce** as elements such as cloud computing, mobile devices, network speed, web conferencing, speech recognition, artificial intelligence, online learning, and the Internet of Things. These every-day technologies should be incorporated into design and the design process, and to be competitive, graduates must be ready to embrace, introduce, and champion the newest elements for their employers. UTSA is known worldwide for its “cyber/digital” expertise, and our graduates could benefit from a greater and deeper connection with this strength. In addition, we need to be intentional about providing experiential education that addresses the “digital divide” that has impacted many of our students’ backgrounds. By addressing this divide, we can better prepare our students to be integrated into the modern A/E environment.

Increasingly, higher education is responding to workforce trends in architecture, engineering, design and construction by **creating synergistic programs**, such as experiential opportunities that integrate these areas into Senior Design Projects, while also enhancing the uniquely creative design process that is inherent to architecture. UTSA Architecture faculty have empowered students to create elegant design-build projects with innovative technological developments, and at the Urbino campus, engineering, construction, and architecture students work collaboratively on senior design projects that are a closer approximation to realistic integrated design-build projects. Through more regular and cohesive collaboration between disciplines, these opportunities could become the norm at the San Antonio campus to impact a much broader student population. Our students will be the leaders of industry that the workforce seeks to integrate into their culture.

The **professional development and authentic learning experiences** of our students can be greatly enhanced by a closer association among engineering, architecture, construction, and planning programs. San Antonio leaders from SAWS and SARA have asked that UTSA students receive more comprehensive training in the elements of sustainability that are increasingly desired in civil infrastructure projects, which can best occur by integrating key elements of program curricula. For example, engineering capstone projects would benefit from **interdisciplinary teams** to provide social, sustainability, and resilience context to their problem solutions. Interdisciplinary training also provides engineering, architecture, construction and planning students the opportunity to participate in **true design-build** projects in their curricula, which are authentic learning opportunities that will increase their

competitiveness on the job market. Graduates of these programs will also be better situated to become **LEED certified**, which not only increases their marketability, but also serves the workforce needs of employers while providing new continuing education opportunities to current professionals.

The new STEM designation for architecture, construction, and planning programs at UTSA is also supported with a closer association with engineering programs. A closer alliance strengthens the creative expertise but will also provide access to the technical and materials resources, student success programs, and administrative support that is already in place in the College of Engineering. The work has already begun, as PhD program tracks for architecture and construction sciences are integrated into the Civil Engineering PhD program, thus promoting faculty and graduate students to work together in the classroom and through research.

Path Forward

How can we leverage the existing strong community engagement and people-centered approaches that currently thrive in CACP, co-infuse respective strengths with collaborating disciplines such as Sustainability, Advancing San Antonio's rich cultural heritage and history, and Community engagement, in a bold, innovative, forward-looking, aligned vision that inspires donors, attracts high quality students and prepares them for the integrated workforce, and accelerates discovery and application?

Develop a new structure founded on bold ideas of interdisciplinary programs and professional preparation that enables the success of our students in the workforce and delivers tri-directional impacts, with benefits to all disciplines, e.g.:

- *Infuses innovative design => Construction, Engineering*
- *Infuses Low-Impact Development & Sustainability => Engineering*
- *Infuses "Smart, Connected" => Construction, Architecture*
- *Infuses Cultural Preservation => Engineering*
- *Infuses Cost, Schedule, Performance => Architecture, Engineering*

And inspires donors with the bold aspirations – first in class – that shapes needs for new facilities, programs, and other infrastructure, including for example a new building home for interdisciplinary programs to design smart and connected infrastructure, endowments to support new faculty, new programs, etc.

Initiative:

To fully leverage UTSA's expertise across architecture, construction, planning, historic preservation, interior design and engineering and optimally position UTSA on the cutting edge of transdisciplinary research, academic programming, and workforce preparation for our students, we are launching a Task Force to study and recommend multiple potential structures that bring the disciplines currently administered by the colleges of engineering and CACP under one administrative home. Such models must be designed to accomplish the following institutional objectives:

- Enhance student success, though promoting transdisciplinary curricular and experiential learning opportunities,

- Prepare students for the modern integrated, collaborative workforce,
- Take particular, active steps to prepare our Hispanic, First Generation, and other URM students for prosperous futures,
- Increase UTSA's ability to successfully compete for extramural funding opportunities to address grand challenges,
- Promote cross-cutting collaborations internally with other campus units, potentially through exploring joint faculty appointments or other mechanisms,
- Promote external collaborations with other industry, non-profits, and other academic institutions, including those seeking HSI partnerships, and
- Promote community collaborations, particularly in sustainable, smart, connected cities and infrastructure that also support our distinctive cultural heritage and future.

The objective of this process is to retain the ***strong community engagement and people-centered approaches*** that currently thrive in CACP, while infusing these elements into collaborating disciplines. These elements include:

- ***Sustainability.*** Within the demand of creating and maintaining the built environment, CACP faculty have integrated sustainability concepts seamlessly into their classroom and experiential learning spaces. CACP students learn to work with natural resources and spaces to create inspiring designs with low impact development.
- ***Advancing San Antonio's rich cultural heritage and history.*** A respect and understanding of the unique historic structures and spaces in the San Antonio region is infused throughout the CACP curricula. Research and educational projects embrace and expound on these principles, and students graduate with special expertise and marketable skills.
- ***Community engagement.*** The curricula and research efforts in CACP are interwoven with San Antonio. As a Hispanic-serving institution, connecting to the San Antonio community is paramount to UTSA's identity and future success. The CACP special relationships include the West Side as it is impacted by UTSA downtown expansion, city officials as they plan for historic growth and downtown revitalization, the art community with an appreciation of creating inspiring spaces, and other social elements such as the homeless and vulnerable urban populations. As these elements are nurtured through interdisciplinary collaborations, UTSA is able to become a sustaining member of the San Antonio community and UTSA graduates are better prepared to be responsible global citizens.

Whereas the elements expounded above demonstrate the true excellence to be found within the CACP disciplines, faculty, and students, growth and sustainability of these programs is hampered by a larger proportion of ***administrative burden***. To offer the highest quality educational experience, Architectural and design studios are limited in size, and program growth should not outpace workforce needs. The introduction of the IRM financial model at UTSA reveals how the administrative burden to support an independent college can hamper program growth and accomplishment by funneling resources away from new faculty positions and other educational needs. A new curricular structure that leverages other administrative units can free the faculty to forge entrepreneurial transdisciplinary partnerships for new degrees, innovative courses including online, experiential learning opportunities and impactful scholarship to benefit our students and communities.

The College of Engineering (COE) has the needed **administrative resources and services that can be leveraged and augmented to serve all faculty – including development, financial, student success, and research support structures**. And although COE does not face the same constraints in terms of class size and delivery, the faculty and students will greatly benefit from a closer association with architecture, construction, and planning disciplines, such as through the connectivity to cultural, historic design, sustainability policy elements and design aesthetics in the community. Other lucrative areas for strategic collaborations could include artificial intelligence, materials engineering, sensor technology, data science, and other elements that will also contribute to the STEM designation of architecture, construction, and planning. The launch of the shared PhD programs between civil engineering, construction science, and architecture is already benefiting from the closer relationship.

The alignment and connection of these interdisciplinary programs also presents tremendous potential for the **development of new resources**. A new structure founded on **bold** ideas of interdisciplinary programs and professional development leads to **bold** aspirations for new facilities, programs, endowments, and other resources. The excitement around an infusion of innovation will inspire supporters to realize how their gifts will uniquely prepare UTSA graduates to shape the future of our societies through problem solving and design—such as a new building as a home for a school of interdisciplinary programs to design smart and connected infrastructure, endowments to support new faculty and new programs, or others. The development structure within COE is ready to expand and embrace these opportunities to help all faculty and students realize their ultimate successes in education, research, and community impact.

Three Phases:

- Phases I & II Task Force: Developing the Vision
 - See task force process, as described below, to inventory the current landscape of academics, research, experiential learning, and workforce development (Phase I) to develop notional structures (Phase II) for an organizational unit within COE that addresses the disciplines of Architecture, Construction and Planning; wherein these disciplines are ideally positioned to thrive under the new IRM model and forge innovative partnerships that help further their potential for growth and success. The Phase I & II Task Force process will be followed by Academic Affairs outreach to faculty, staff, students and community members prior to a decision on the resultant structure.
- Phase III: Implementing the Vision
 - To be charged following a decision on the resultant structure, this phase addresses the college naming and other key matters to support the realization of the selected structure. This phase will include broader membership representation across all impacted disciplines.

Phase I & II Charge: Developing the Vision

Charge: I) Consider the landscape of UTSA student interests, regional workforce needs and partnering opportunities, key stakeholders, and multidisciplinary research opportunities related to Architecture, Construction and Planning, and II) Propose multiple notional organizational structures on alignment of the disciplines of CACP within COE, along with considerations of infrastructure, identity and reputation,

to be considered and discussed broadly by CACP and COE faculty, staff, students, and UTSA leadership in consultation with key community stakeholders.

Process and Deliverables:

- **Phase I “research phase”: Three subcommittees**
 - **What we do, how we do it, and where we’re heading**
 - This subcommittee uses existing IR data on academic program success and growth potential and research capacities and opportunities; performs internal outreach to students, faculty and staff; identifies gaps; and may initiate additional research as needed, with the help of Institutional Research.
 - **Benchmarking**
 - This subcommittee looks to other structural models to promote interdisciplinary and collaborative curricula with minimized administrative burden.
 - **Community/region/states needs/opportunities**
 - This subcommittee will consider data collected, such as from the CEO roundtables, the CACP Charrette that is already being planned, outreach that is already occurring independent of this process with departmental advisory boards and Alumni, and other sources relating to local/regional needs and identify gaps, performing additional research and outreach as needed.
- **Phase II “notional models”:** Subcommittees memberships will be mixed and each will propose at least two notional models for consideration. These models must detail an optimal structure (or structures) for housing the disciplines of Architecture, Construction and Planning in a single administrative home with COE; wherein these disciplines are ideally positioned to thrive under the new IRM model and forge innovative partnerships that help further their potential for continued growth and excellence.

Overarching Initiative Parameters

The proposed organizational structure must:

- Be innovative, exciting, and **bold**,
- Foster creativity,
- Increase visibility and maintain distinction of all represented disciplines,
- Preserve and enhance reputation as a place to study design
- Advance the present and future workforce needs in the city, region and state,
- Enhance opportunity for growth and/or enhancement of programs and research/scholarship for Architecture, Construction and Planning,
- Synergize with and contribute to COE’s [Shape the Future](#) strategic vision to advance [UTSA’s Strategic Plan](#)
- Leverage strong administrative and academic support services in a single, strong administrative college home, and
- Capitalize on synergies to increase success in the IRM model.

Representation:

This effort will be led by Dean Browning, and supported by Academic Affairs, Dr. Shannon Heuberger.

The subcommittees are composed of members primarily from architecture, construction, planning and engineering disciplines, and also include other faculty such as environmental sciences, geography, business, art, and public administration to infuse innovation and interdisciplinary collaboration into discussions. Resource members are also included to assist in obtaining institutional data.

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Timeline:

Following the results of the survey of CACP faculty, the approximate timeline is:

Complete Phases I & II in Fall 2020 by working through Summer 2020

- Phase I Research completed by end of June
- Phase II Notional models by end of September
- Campus Forums / unit outreach October
- November Decision with Launch of Phase III

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