



**STEPHEN F. AUSTIN
STATE UNIVERSITY**
THE UNIVERSITY OF TEXAS SYSTEM

↗ STRATEGIC PLAN
**SECOND
CENTURY
2026-2036**

1 STUDENT EXPERIENCE



↗ STUDENT EXPERIENCE STRATEGIES

Ensure students have the opportunity for a transformative, student-centered experience that provides comprehensive support and an affordable education, and supplies a vibrant, engaging campus life — empowering every student to thrive personally and professionally before and after graduation.

1

Enhance Student Recruitment and Enrollment

2

Increase Financial Literacy and Aid

3

Strengthen Student Support and Retention

4

Enrich Campus Life and Social Engagement



PATHWAYS FOR SUCCESS

1.1

Enhance Student Recruitment and Enrollment

- ↗ 1.1.1 Implement targeted recruitment initiatives at the undergraduate and graduate level emphasizing SFA's unique academic offerings and supportive community.
- ↗ 1.1.2 Improve efficiencies and timeliness associated with applications, enrollment, and financial aid.
- ↗ 1.1.3 Collaborate with regional K-12 schools and community colleges to establish seamless pathways for students, including streamlined transfer processes.
- ↗ 1.1.4 Provide an enhanced digital experience so that students can take care of procedural items online.

1.2

Increase Financial Literacy and Aid

- ↗ 1.2.1 Expand scholarships, tuition assistance, work-study opportunities, and emergency aid to ensure financial barriers do not impede student enrollment and retention.
- ↗ 1.2.2 Re-envision the provision of course materials for students and support open educational resources.
- ↗ 1.2.3 Offer programming and resources to educate students and their families on managing finances, budgeting, and minimizing debt to empower them to make informed financial decisions.

PATHWAYS FOR SUCCESS

1.3

Strengthen Student Support and Retention

- ↗ 1.3.1 Adopt proactive, data-informed advising practices that address both academic and personal factors impacting student success.
- ↗ 1.3.2 Expand orientation and support services for first-year, second-year, transfer, and international students, recognizing their unique backgrounds and positioning them for success.
- ↗ 1.3.3 Utilize predictive analytics to identify at-risk students and implement targeted interventions to support their academic journey.
- ↗ 1.3.4 Support the development of students as professionals, including growing the number of paid internships and career support opportunities.
- ↗ 1.3.5 Increase financial, academic, and housing support options for graduate students to improve competitiveness and affordability.
- ↗ 1.3.6 Offer a vibrant residential experience that fosters academic success and personal growth, making SFA a destination of choice for prospective students.
- ↗ 1.3.7 Invest and maintain academic, residential, student, and athletic infrastructure according to the Master Plan.

1.4

Enrich Campus Life and Social Engagement

- ↗ 1.4.1 Promote a welcoming campus environment by fostering a supportive atmosphere where all students feel connected and valued as part of the campus community.
- ↗ 1.4.2 Expand opportunities for student involvement in clubs, leadership roles, and campus events to deepen their engagement and sense of belonging.
- ↗ 1.4.3 Develop a co-curricular experience to better describe to future employers the translatable skills and traits the students acquired or accessed through their participation in various co-curricular activities.
- ↗ 1.4.4 Offer a variety of events and activities that encourage students to connect, have fun, and explore shared interests, contributing to a vibrant and dynamic campus experience.



2 ACADEMIC PROGRAMS



↗ ACADEMIC PROGRAMS STRATEGIES

Refine academic programming to develop graduates who are versatile, creative thinkers with a broad range of skills — ready to thrive in a rapidly changing job market with the ability to solve complex, real-world problems.

1

Invest Strategically
in High-Growth
Academic
Programs

2

Elevate Career
Readiness Through
Real-World
Experiences

3

Foster Cross-
Program Innovation
for Versatile
Learning



PATHWAYS FOR SUCCESS

2.1

Invest Strategically in High-Growth Academic Programs

- » **2.1.1** Identify and prioritize investments in emerging programs with significant potential, that are sustainable and cost-effective.
- » **2.1.2** Continuously review SFA's academic portfolio, focusing resources to ensure that it remains innovative, sustainable, responsive to workforce trends, and prepared to deliver a broad range of skills to SFA's graduates.
- » **2.1.3** Invest and maintain facility infrastructure in support of academic programs and the Master Plan.

2.2

Elevate Career Readiness Through Real-World Experiences

- » **2.2.1** Expand industry and business partnerships and integrate hands-on learning opportunities into the curriculum.
- » **2.2.2** Ensure students develop practical skills and adaptability through their academic experience to meet the evolving demands of today's workforce.
- » **2.2.3** Integrate high-impact, engaged learning experiences into foundational courses, connecting theoretical knowledge with practical applications to prepare students for real-world challenges.
- » **2.2.4** Develop new doctoral and professional programs in strategic fields, including veterinary medicine, aligned with faculty expertise and industry needs.

2.3

Foster Cross-Program Innovation for Versatile Learning

- » **2.3.1** Encourage dynamic, interdisciplinary collaborations among colleges and departments.
- » **2.3.2** Cultivate a learning environment where creative problem-solving and versatile thinking emerge through shared expertise and joint projects.
- » **2.3.3** Form an Interdisciplinary Curriculum Committee/Task Force consisting of faculty across all colleges to guide the development of collaborative courses and related academic credentials.
- » **2.3.4** Create a structured process that enables students to earn certificates or stackable microcredentials that enhance their academic and professional profiles.

Our goal at SFA is to equip students with the knowledge, skills, and experiences to **THRIVE PROFESSIONALLY**.

By promoting creative problem-solving and versatile learning opportunities, we prepare graduates to make **MEANINGFUL CONTRIBUTIONS** to their communities and beyond.



3 RESEARCH AND CREATIVE ACTIVITIES

Abstract

The chemical content of eggshells is important for tracking the health of fowl, as the content of their eggshells reflects aspects of their diet, environment, and behaviors. Due to this, eggshells can serve as an indicator for environmental contaminants and the conditions in which the birds are found. Carbonic anhydride plays a role in the development of eggshells and is affected by many environmental impacts, such as heavy metals. Calcium carbonate makes up a large portion of eggshells, yet heavy metals can replace calcium in eggshells, leading to deformations and contamination to the egg that can affect those consuming it. However, the analysis of calcium content in eggshells has proven difficult. A common instrument used to determine elemental composition is the ICP-MS; however, calcium is difficult to analyze. The argon used to generate the plasma interferes as it has a similar mass to calcium, which leads to artificially high and inconsistent calcium concentrations. A new method for isolating the calcium from eggshell is being developed to analyze the environmental impacts on chicken health. Oxalate is used to precipitate calcium oxalate from the eggshells. Gravimetric analysis is done using STA and IR. This will be done in addition to a full characterization using ICP-MS, XRD, and C-N analysis.

Introduction

Eggs are a major component of the life cycle of avian species and the environment. The composition of the egg reflects the diet consumed by the animal and can be used as an indicator of the environment it lives in [1]. Proper calcium intake is imperative for the success of offspring and the production of eggs. Improper calcium intake or presence of heavy metals, like strontium, can disrupt the hatching success of the eggs [2].

Calcium carbonate is the main chemical component of eggshells and makes up about 94% of the eggshells in poultry chicken eggshells [3,4]. Other trace metals like Sr, Ba, Mn, As, Cd, Cu, Pb, Hg, Se, V, and Zn could also possibly be found in the chemical composition of the eggshells [2,5]. The presence of some of these heavy metals can lead to egg malformation, embryo death, transfer of the metal to the yolk and consumption by other species.

The Ca^{2+} content of eggshells is surprisingly difficult to quantify. In the ICP-MS, there are many interferences with the Ca^{2+} signal, including the argon gas used to generate the plasma. ICP-OES is the preferred method to quantify Ca^{2+} but not every lab has access to this instrument. Oxalate preferentially precipitates Ca^{2+} as $\text{CaC}_2\text{O}_4\cdot\text{H}_2\text{O}$ and is being investigated as a method to determine Ca^{2+} content in eggshells.

Sample Preparation

- Collected eggs and washed with a mild detergent.
- Carefully scored eggs to divide eggs into sharp and dull ends then cleaned and removed inner membranes.
- Ground eggshells using a McCrone Micronizing mill and 200 proof EtOH for 3 minutes each to form an eggshell slurry.
- EtOH was evaporated from eggshell slurry and slurry was dried at 105°C in an oven.
- The dried eggshell was homogenized to a powder using an agate mortar and pestle.
- Approximately 0.15 g of eggshell was reacted with 10 mL of 1 M hydrochloric acid (HCl) and approximately 1.3 g of oxalic acid ($\text{H}_2\text{C}_2\text{O}_4$).
- Precipitate was collected via vacuum filtration.
- Powdered precipitate samples used for STA (Perkin Elmer STA 6000 coupled with Perkin Elmer Spectrum One FT-IR in nitrogen and air backgrounds).

Methods and Materials

Oxalate decomposition equation for STA

$$\text{CaC}_2\text{O}_4\cdot\text{H}_2\text{O}(\text{s}) \rightarrow \text{CaC}_2\text{O}_4(\text{s}) + \text{H}_2\text{O}(\text{g}) \rightarrow \text{CaCO}_3(\text{s}) + \text{CO}(\text{g}) \rightarrow \text{CaO}(\text{s}) + \text{CO}_2(\text{g})$$

Figure 1 Chickens from the East Texas chicken farm, including Tree, Green, Blue, and Purple. Photo credit: M. Clevenger.

Results

Figure 2 Decomposition of Brown Egg 1 Dull end eggshell, precipitate of Brown Egg 1 Dull end after exchange with oxalic acid, and CaCO_3 prepared using the same procedure from stock CaCO₃ using Thermogravimetric Analysis (TGA).

Figure 3 3D plot of the measured FT-IR spectra of Brown Egg 1 Dull end before and during the decomposition of CaCO_3 in nitrogen background corrected over time. July 20 was during the decomposition of CaCO_3 , first thermal event, CO₂ peaks were seen during the decomposition of CaCO_3 in air, second thermal event, and during the CO₂ desorption. The third thermal event, no significant difference between the two is seen.

Figure 4 A comparison between the CO_2 gas of Brown Egg 1 Dull and black teal after 1000°C in nitrogen background corrected over time. July 20 was during the decomposition of CaCO_3 , first thermal event, CO₂ peaks were seen during the decomposition of CaCO_3 in air, second thermal event, and during the CO₂ desorption. The third thermal event, no significant difference between the two is seen.

Discussion/Conclusion

- The CaCO_3 found in the brown chicken eggshells was ~95%, which was a higher percentage than expected based on literature [3,5]. This is probably due to the diet the hobby farmer provides the chickens.
- When the eggshells are exchanged with oxalic acid, a massive loss of mass is seen. Any loss is due to transfer loss during filtration and ashing. Potential transfer loss are being investigated (ultra filter paper and double filtration).
- Sta (Perkin Elmer) is not a concern. MgO was seen. MgO is not a concern as there was no significant difference between the two samples.
- Full ends are not a concern as the calcium is not lost.

Acknowledgements

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- East Texas chicken farm egg donor.
- Stephen F. Austin State University Department of Chemistry and Biochemistry.



↗ RESEARCH AND CREATIVE ACTIVITIES STRATEGIES

Establish SFA as a nationally recognized hub for interdisciplinary research, scholarship, and creative excellence through strategic investment in infrastructure, partnerships, graduate education, and community engagement.

1

Promote a Culture of Student Research and Creative Achievement

2

Enhance Research Infrastructure and Faculty Support

3

Cultivate Interdisciplinary Centers of Excellence

4

Amplify Research Visibility and Community Impact



PATHWAYS FOR SUCCESS

3.1

Promote a Culture of Student Research and Creative Achievement

- ↗ **3.1.1** Ensure all students have access to meaningful research and creative experiences.
- ↗ **3.1.2** Integrate research-enhanced learning into academic programs and expand summer research initiatives.
- ↗ **3.1.3** Support faculty mentorship and curriculum innovations.
- ↗ **3.1.4** Encourage and support student participation in research, scholarship, arts, and other creative activities to cultivate critical thinking and problem-solving skills.
- ↗ **3.1.5** Utilize SFA's unique location and community resources to offer experiential learning opportunities that enrich the educational journey and provide a competitive edge.
- ↗ **3.1.6** Foster cross-sector partnerships that enhance experiential and applied research opportunities.

3.2

Enhance Research and Creativity Infrastructure and Faculty Support

- ↗ **3.2.1** Invest in facilities and administrative structures to strengthen research capacity.
- ↗ **3.2.2** Create flexible faculty workload policies and robust internal funding mechanisms that increase research productivity, including separate teaching and research track pathways.
- ↗ **3.2.3** Recruit and retain high-caliber faculty to build research and creative capacity.
- ↗ **3.2.4** Expand post-doctoral appointments to improve faculty pipelines.

PATHWAYS FOR SUCCESS

3.3

Cultivate Interdisciplinary Centers of Excellence

- ↗ 3.3.1 Establish centers focused on high-impact areas aligned with SFA's mission and strengths.
- ↗ 3.3.2 Promote research collaboration across disciplines and institutions through consortia and community engagement initiatives.
- ↗ 3.3.3 Secure external funding and partnerships to ensure long-term sustainability and visibility of centers.

3.4

Amplify Research and Creative Work Visibility and Community Impact

- ↗ 3.4.1 Implement a comprehensive communication strategy to highlight faculty, student, and center-based research.
- ↗ 3.4.2 Use podcasts, events, and media engagement to reach diverse audiences locally and nationally.
- ↗ 3.4.3 Seek national designations (e.g., Carnegie Community Engagement Classification) to validate community impact.



4 INNOVATION



↗ INNOVATION STRATEGIES

Establish SFA as the regional hub for innovation that cultivates opportunities for students to meet the emerging needs of the future, allowing SFA to become the premier hands-on, experiential and service learning university that addresses the unique needs of our local and regional communities.

1

Partner with Business and Industry for Student Experiential and Service Learning Opportunities

2

Establish SFA as a Central Hub to Address Critical Needs of East Texas

3

Leverage the Economic and Population Growth within the Texas Triangle

PATHWAYS FOR SUCCESS



SFA is positioning itself as a center for INNOVATION. Here, students gain practical experience and tackle real-world challenges, collaborating with industry and community partners to address the evolving and emerging needs of East Texas and beyond.

4.1

Partner with business and industry for student experiential and service learning opportunities

- **4.1.1** Enhance career preparation and readiness by establishing co-operative education (co-op) programs and registered apprenticeships, while also increasing paid internships and teacher placement opportunities.
- **4.1.2** Seek opportunities to align research and training initiatives to support the regional workforce, especially those dedicated to regional issues, and align university goals to advocate for the region and key issues wherever possible.

4.2

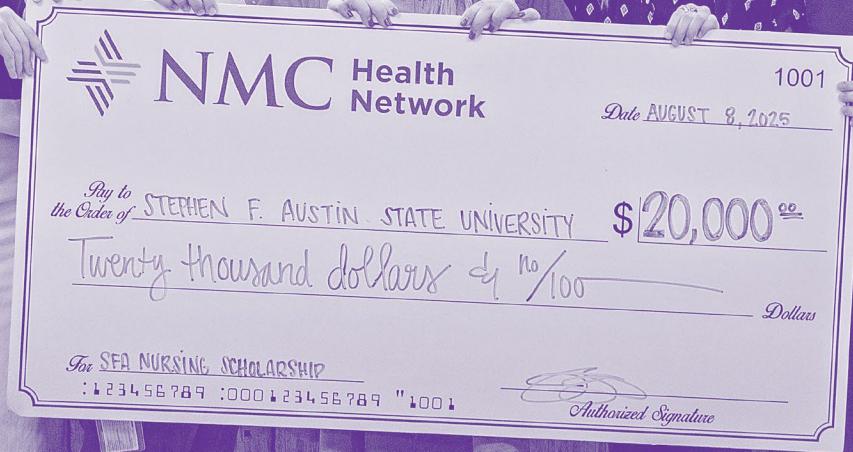
Establish SFA as a central hub to address critical needs of East Texas

- **4.2.1** Maximize the impact of centers for excellence, designed to support community, workforce, entrepreneurship, and economic development.
- **4.2.2** Explore the feasibility of a community-facing, multi-use facility to bridge the gap between campus and the local/ regional community.

4.3

Leverage the economic and population growth within the Texas Triangle

- **4.3.1** Identify credit and non-credit programs to locate in the Houston and DFW metroplex and assess operating needs to deliver those programs.



5 WORKPLACE CULTURE



↗ WORKPLACE CULTURE STRATEGIES

Foster an empowering environment that attracts and retains exceptional faculty and staff by championing professional growth and meaningful recognition.

1

Improve
employee
recognition

2

Enhance
opportunities
for professional
growth

3

Recommit to
clear, consistent,
transparent
communication
and institutional
shared governance



PATHWAYS FOR SUCCESS

5.1

Improve employee recognition

- ↗ **5.1.1** Increase salary support for faculty and staff through merit-based compensation and equity adjustments that put salaries at parity with employees at UT System peer institutions.
- ↗ **5.1.2** Review and expand non-salaried benefits that support employee quality of life.
- ↗ **5.1.1** Provide incentives to reward excellence and promote employee morale.

5.2

Enhance opportunities for professional growth

- ↗ **5.2.1** Improve funding models to provide sufficient, equitable opportunities for professional development for faculty and staff.
- ↗ **5.2.2** Improve the employee onboarding experience.
- ↗ **5.2.3** Review division organizational structures and investigate opportunities to create or revise career ladders.
- ↗ **5.2.4** Model and support professional development opportunities in each area using current SFA resources such as academic courses, Coursera modules, micro-credentials, and training.

5.3

Recommit to clear, consistent, transparent communication and institutional shared governance

- ↗ **5.3.1** Implement regular forums to share institutional updates and encourage open dialogue between administration and employees.
- ↗ **5.3.2** Commit to timely budget transparency with all employees.



"I am personally committed to fostering an environment where every team member feels valued, supported, and EMPOWERED TO GROW. By recognizing achievements, providing meaningful professional development, and maintaining open, transparent communication, we ensure SFA remains a place where exceptional talent thrives and our shared mission CONTINUES TO FLOURISH."

SFA President Neal Weaver



STEPHEN F. AUSTIN STATE UNIVERSITY

THE UNIVERSITY OF TEXAS SYSTEM
NACOGDOCHES, TEXAS