



Alief Life Sciences Innovative Academy  
T-STEM Renewal Application  
2018-2019

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# Background

## District Affiliation

ALIEF ISD

DC #: 101903

Region: 04

Mailing Address (Line 1): P O BOX 68

Mailing Address (Line 2):

City, State, Zip: ALIEF, TX 77411

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## School Affiliation

HASTINGS H S

CDC #: 101-903-001

Region:

Mailing Address (Line 1): 4410 COOK RD

Mailing Address (Line 2):

City, State, Zip: HOUSTON, TX 77072

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## Academy Information

**T-STEM Academy Name:**

Alief Life Sciences Innovative Academy

**What grade level range will your academy serve in the 2018-2019 school year?**

6-12

Grade Level	Number of Students
6	300
7	300
8	300
9	115
10	70

# Contacts

## Business Partner

**Affiliation:** Walgreens  
**Job Title:** District Manager of Pharmacy and Retail Operations  
**Full Name:** Mr. Duc Dang  
**Email:** duc.dang@walgreens.com  
**Phone Number:** 281-658-7225

## Superintendent

**Job Title:** Superintendent  
**Full Name:** Mr. H.D. Chambers  
**Email:** hd.chambers@aliefisd.net  
**Phone Number:** 281-498-8110

## Applicant

**Job Title:** District STEM Facilitator  
**Full Name:** Mr. Bob Fulbright  
**Email:** robert.fulbright@aliefisd.net  
**Phone Number:** 832-857-3577

## IHE Liaison

**Affiliation:** Houston Community College  
**Job Title:** Associate Vice Chancellor of College Readiness  
**Full Name:** Dr. Catherine O'Brien  
**Email:** catherine.obrien2@hccs.edu  
**Phone Number:** 713-718-2383

# Narratives

## Model Implementation

**Which T-STEM model does the district intend to implement at this time? Within these models, there are variations. For this purpose campus is defined as a CDC number not a physical location.**

School-Within-School: Multiple Campuses - A subset of students in grades 6-12 are enrolled in the T-STEM academy. This model typically spans a middle school and high school. This may also be applicable if 9th grade is on a separate campus due to physical space issues.

## Endorsements

**Identify the current endorsements that are offered:**

- Science, Technology, Engineering, and Mathematics (STEM)
- Business and Industry
- Public Services

## Industry Certificates

Identify all industry certificates offered to students.

Certificate	Description
NCCER	National Center for Construction Education and Research created a standardized training and credentialing program for the industry.

## Level One Certificates

Identify all level one certificates offered to students.

Certification	Description
Construction Helper	The Construction Helper certificate prepares students for entry-level employment in the field of construction. Students are exposed to a variety of trades involved in residential and commerc

## Level Two Certificates

Identify all level two certificates offered to students.

Certification	Description
Pharmacy Technician	The Pharmacy Technician Certificate Program is designed to prepare students for employment in most pharmacy settings, ranging from community and hospital pharmacy to home health pharmacy.



## Key Elements for Success

**Provide a link to the job description, roles of design team, leadership team, and advisory board.**

<https://drive.google.com/open?id=1-F1vTp5Eq48R4iT0gobZSS05ZKlXpt5J>

**Provide a link to your mission statement.**

<https://drive.google.com/open?id=19JVu4go75hPbzJALxvcUMfK6qkfF957S>

**Provide a link to the final, signed, and executed MOU.**

<https://drive.google.com/open?id=11Glw5tN-Ll2SFAem-QDSmv2DPL-yRT3>

**Provide a link to the academy's master schedules.**

<https://drive.google.com/open?id=11TVrbGojoFPtwp47dLnln2dbOFdjiiU>

**Provide a link to the academy's Student IGPs with CCRS and Performance Acknowledgement Plans.**

[https://drive.google.com/open?id=1Zhcekmg9hcSeX8\\_XjxgrYv-ZFM5UclQ-](https://drive.google.com/open?id=1Zhcekmg9hcSeX8_XjxgrYv-ZFM5UclQ-)

**Provide a link to the academy's written admission policy and enrollment application.**

<https://drive.google.com/open?id=1RYReh-gNlaZp0HfBJxzzc-qhpAEaPnej>

**Provide a link to the academy's written recruitment plan including a timeline of recruitment and enrollment events, and recruitment materials for distribution at feeder schools and other appropriate locations in the community**

[https://drive.google.com/open?id=1sZE\\_YntqXBNBJCYqZmxNcjqdS\\_lflIDE](https://drive.google.com/open?id=1sZE_YntqXBNBJCYqZmxNcjqdS_lflIDE)

**Provide a link to the academy's description of instruction practices.**

[https://drive.google.com/open?id=1KxVvYUHgENbawvB81eGaj\\_GMTGMjTPpMa](https://drive.google.com/open?id=1KxVvYUHgENbawvB81eGaj_GMTGMjTPpMa)

**Provide a link to the academy's STEM-focused extracurricular activities.**

<https://drive.google.com/open?id=1dKUU9cMLLaB05-nASOjah8GCEq3Vi7Ls>

**Provide a link to the academy's internship and externship opportunities.**

[https://drive.google.com/open?id=1Lpny3d8fjpWWZ5\\_ttYfeX9eRQFJnGNOD](https://drive.google.com/open?id=1Lpny3d8fjpWWZ5_ttYfeX9eRQFJnGNOD)

**Provide a link to the academy's Senior Capstone Project description.**

<https://drive.google.com/open?id=1BDluKomx2lReOWvayW4bN4mb43nYwNYU>

**Provide a link to the academy's Student Portfolio Plans.**

[https://drive.google.com/open?id=1bIDBUjTl4SF18J\\_fKLpWZqSVn\\_6g6Nu1](https://drive.google.com/open?id=1bIDBUjTl4SF18J_fKLpWZqSVn_6g6Nu1)

**Provide a link to the academy's Academic Literacy Plan.**

<https://drive.google.com/open?id=1C3kAjSuG4gVl8XzBtK8-V46-GpQKGQMY>

**Provide a link to the academy's Assessment strategy.**

<https://drive.google.com/open?id=1ooiQCsaViTcRmOGrVBO1qnodHX1hoxxF>

## Free-Response

### **Describe how the Academy will recruit, support, and retain highly qualified teachers.**

We have been very fortunate to retain over 90% of our teachers to date. After the initial fear of the unknown wears off, our feedback from teachers has been very positive. They enjoy their role in the classroom and the STEM learning environment. Teachers sharing their experiences with other teachers has been our most effective recruitment tool. Sharing our student assessment data has also made a convincing argument for teachers to join our program. Using a school-within-school T-STEM model has allowed the Alief STEM Academy to grow proportionately and responsibly. We have been able to identify teachers at our STEM campuses who are coachable and willing to be different. Alief ISD has created a data-driven school culture and our STEM program reflects that commitment. Alief STEM Academy uses state and district common assessments as quantitative data to develop and plan professional development. We conduct peer observations, and district STEM classroom walkthroughs to collect qualitative data. Our district instructional leaders developed modules for use in our learning management system to provide professional development. These modules are focused on the essentials of STEM lessons: Explicit learning outcomes, Engineering Design Process, Problem-based Learning, Student Autonomy, Rigorous Learning, and Personalization of Instruction. We are working with the Greater Houston Partnership and UpSkill Houston to identify jobs in our region. The Alief STEM Academy is committed to developing teachers in research-based strategies and coaching them for on-going classroom support.

**Describe the current STEM pathways available at the academy.**

Alief / HCC Course Crosswalk for Life Sciences Innovative Academy – AAS In Allied Health: Pharmacy Technician

**FRESHMAN YEAR**

English I  
Algebra I  
Biology  
World Geography / AP Human Geography  
Spanish  
AVID  
Foundations of Fitness

**SOPHOMORE YEAR**

English II  
Geometry  
Chemistry  
World History  
Spanish II  
Pharmacology A (PHRA 1301)  
Pharmacology B (PHRA 1305)

**JUNIOR YEAR**

English III  
Algebra II  
US History  
Pharmaceutical Math I (PHRA 1309)  
Practicum in Health Science B (PHRA 1413)  
Math/Life & Physical Science (CHEM 1411)  
Scientific Research and Design (CHEM 1412 General Ed Elective)  
Practicum in Health Science A (PHRA 1272)  
Practicum in Health Science C (PHRA 1304)

**SUMMER AFTER JUNIOR YEAR**

Practicum in Health Science D (PHRA 1261)

**SENIOR YEAR**

AP English IV  
4th Math TBD  
4th Science (Anatomy & Physiology / Physics / Science of Choice)  
Government  
Economics  
Math for Medical Professionals II (PHRA 1247 – Pharmaceutical Math II)  
Practicum in Health Science II C (PHRA 1243)  
Practicum in Health Science II A (PHRA 1449)  
Practicum in Health Science II D (PHRA 2260)  
Practicum in Health Science II B (PHRA 1445)  
PBR – Health Science A (PHRA 2261)

Technology: Construction Specialization

FRESHMAN YEAR

English I  
Algebra I  
Biology  
World Geography / AP Human Geography  
Spanish  
AVID  
Foundations of Fitness

SOPHOMORE YEAR

English II  
Geometry  
Chemistry  
Spanish II  
Introduction to the Construction Industry (CNBT 1201)  
Industrial Mathematics (TECM 1301)  
Construction Methods & Materials I (CNBT 1311)  
Mechanical, Plumbing & Electrical Systems in Construction I (CNBT 1302)  
Construction Technology I (CNBT 1316)  
Supervision (BMGT 1301)

JUNIOR YEAR

English III  
Algebra II  
US History  
Environmental Science (GEOL 1305)  
History of American Music (MUSU 1306)  
Refrigeration Principles (HART 1307)  
Construction Tools and Techniques (CNBT 1318)  
Residential & Light Commercial Blueprint Reading (CNBT 1300)  
Construction Management I (CNBT 2342)

SENIOR YEAR

English IV  
Precalculus  
Physics  
Government  
Economics  
Health  
Building Codes & Inspections (CNBT 1342)  
Construction Estimating I (CNBT 1446)  
Integrated Software Applications I (ITSC 1309)  
Computer Aided Construction Scheduling (CNBT 2335)  
Construction Estimating II (CNBT 2337)

**Describe how strategic alliances with industry partners and IHEs will support the Academy. The description should include details regarding the role of each IHE, business, and/or community partnership; along with parent/family partnerships and communication conventions with the Academy.**

Strategic alliances with Walgreens, Cardinal Health, Marek, Bechtel Corporation, CITGO and Shell Oil Company will support the Alief Life Sciences Innovative Academy. The program will highlight Pharmacy Technician and Construction certification programs and provide students with relevant, field-based job shadowing experiences.

Walgreens has committed the second year of support to the Pharmacy Technician certification by allowing students to visit their retail operations, providing on-campus industry skill-building rotations, and teacher externships. A new partnership with Cardinal Health will increase the number of retail pharmacies available for visitation, in addition to providing students with other opportunities for hospitals and health networks, including business, logistics, and patient solutions.

Bechtel Corporation and Marek are committed to providing on-campus construction skill-building rotations, allowing students to visit their construction projects, teacher externships, and guest speakers.

HCC is our primary higher education partner. They will provide access to dual credit courses, resources such as the West Houston Institute makerspace, STEM conferences and summer programming. HCC supports our teachers with professional development and curriculum insight.

Shell Oil Company and CITGO have pledged support for our STEM initiatives, including sponsorship our Alief STEM conference and our 3-time national qualifying SeaPerch ROV program.

We have begun the process of developing partnerships with professional associations for pharmacy technicians and construction in Houston, including the Association of Pharmacy Technicians, National Pharmacy Technician Association, Pharmacy Technician Educators Council, Society for the Education of Pharmacy Technicians, Greater Houston Builders Association and the Houston Contractors Association.

Alief ISD is also working with UpSkill / Greater Houston Partnership to develop business and community partnerships to benefit our students.

**Describe the Academy's work-based and contextual learning in the curriculum.**

Alief STEM Academy uses problem-based learning to engage students in meaningful learning around authentic tasks. "Understanding by Design" focuses on improving the quality of student thinking while mapping the curriculum around "big ideas" and essential questions. Alief STEM Academy uses JASON Learning and STEMScopes to make the content relevant to real-world applications. We incorporate a career focus when using our hybrid PBL model built from ideas gained from Buck Institute professional development and High Tech High School examples. Our students are expected to work collaboratively to develop a product that demonstrates a solution to the problem posed and to present that solution to people from industry. We utilize technology as a means of research, discussion, and expression of their solution. Our curriculum requires rich technology use and scientific literacy, to demonstrate learning through reading, writing, speaking and presenting with the goal of developing academic and STEM technical vocabulary for 21st-century literate graduates.

Alief students learn by doing and regularly engage in activities that connect learning to real-world issues, situations, and problems in connection with local and real-world contexts. As a result, the students acquire critical thinking, creative problem solving, research, and effective communication skills. The focus of the Alief STEM curriculum is contextual learning that includes field experiences directly connected to standards. Students work with community partners, businesses and post-secondary institutions to exercise skills used in the workplace (demonstrating leadership and responsibility, presenting information effectively, exercising time management, organizing their work, etc.).

Curriculum implementation is embedded in STEM industries, and students complete capstone experiences with the support and guidance of educators in the field and industry partners. We provide opportunities for guest speakers, fieldwork, and application of concepts in-school and out-of-school. Leveraging our partnerships with business and community, our students experience integrated curriculum across their career and technical education and academic courses in order to participate in work-based learning tied to their industry-themed curriculum.

**Describe the STEM-focused extracurricular activities (field experiences, clubs, and competitions) offered to students.**

Construction site visitation

University lab experiences

City of Houston bid and permit experiences

Retail pharmacy job shadowing

Coding after-school programs

Girls-in-STEM after-school programs

Visits to medical schools

Industry skills rotations on campuses provided by industry partners

SeaPerch Underwater ROV National Championship Qualifiers

VEX robotics state qualifiers

First Lego League Robotics regional qualifiers

BEST robotics regional qualifiers

SECME Engineering Club

District-wide STEM field trip – Energy Day

Alief STEM Academies featured in Jason Learning / STEMConnector “Day of Design”

Problem-based learning showcases at all STEM Academy campuses

Baylor College of Medicine Doctors working with Killough STEM Academy on latest PBL

IDEAS Academy partnership with AECHS, HCC and Houston Mayor’s Office

Community outreach:

AECHS hosts a booth at Energy Day

Killough STEM Academy volunteers at Liestman STEM night

Olle STEM Academy partnered with Sheldon ISD @ the breakfast klub

Youngblood Intermediate volunteering at Alief Community Garden