# Application for T-STEM Designation - New/Provisional

## 2016-2017

## Contents

# Texas Education Agency
# Application for T-STEM Designation
**Statutory Authority: Texas Education Code §39.235**

## Overview of Designation

In order to operate as a Texas Education Agency (TEA)-approved Texas - Science, Technology, Engineering, and Math (T-STEM) Academy, a district must seek and receive T-STEM designation from TEA. In order to receive the T-STEM designation, a school must exhibit key traits from the T-STEM Academy Design Blueprint included in this application. The intent of this designation is to ensure that districts operating T-STEM Academies: integrate all the key characteristics of well-researched and well-designed STEM education while serving students who may not have otherwise considered the fields of science, technology, engineering, and math.

## Benefits of Designation

**Recognition as an Approved T-STEM Academy:**
Schools designated by TEA as state-approved T-STEM Academies will receive various forms of media recognition including, but not limited to: identification on TEA's website as a state-approved T-STEM Academy and recognition in press releases.

**Participation in T-STEM Convenings:**
Special events hosted by TEA for T-STEM Academy administrators and principals to provide input on policies and procedures that impact T-STEM Academies.

**Membership in the T-STEM Network:**
Frequently opportunities are provided for principals, teachers, and students in designated T-STEM Academies through the T-STEM network to share best practices through conferences and technical assistance sessions. Membership in the T-STEM Network allows T-STEM Academies to access online exemplars, professional development, and webinars.

**Access to Professional Development and Technical Assistance:**
Designated T-STEM academies will have access to high-quality technical assistance which includes advice and information from a Leadership Coach who has successfully facilitated the design and implementation of the majority of T-STEM Academies operating in Texas.

**Strength of T-STEM Model:**

- Through the designation process, TEA will recognize those T-STEM Academies that effectively incorporate T-STEM Design Blueprint elements. The designation process will enable districts and their partners to engage in the research and planning necessary to ensure that their T-STEM Academies are set up in the most effective way possible.
- The T-STEM Blueprint provides a framework for T-STEM Academies to access college and career opportunities that support post secondary success.

# Questions about Completing the Application

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**Who can fill out a T-STEM Academy designation application?**

Any district or charter school campus may apply to be designated as a T-STEM Academy. Potential applicants are encouraged to carefully review the T-STEM Design Blueprint to determine readiness for implementation of the model.

**Will have to fill out the same application each year?**

No. New designation applicants and those T-STEM Academies that are provisionally designated will complete the comprehensive form. T-STEM Academies that are fully designated must complete the abbreviated T-STEM designation application yearly. The abbreviated renewal application will require a designated T-STEM Academy to provide updates regarding changes in the design and operation of the Academy. However, the primary focus of the annual renewal will be to gather evidence on the Academy's progress along the T-STEM Academy Design Blueprint continuum.

**Will this application be required for T-STEM Academy grantees in the future?**

Yes. In future funding cycles, completion of this application will be a program requirement for T-STEM Academy grant recipients.

**Who can I contact for help filling out this application?**

- **New applicants** may contact the T-STEM Program Manager at tstem@tea.state.tx.us.
- **2016-2017 designated T-STEM Academies** may contact their current T-STEM coach.

# Application Information

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**General Information:**

- A district or charter must submit a separate application with the required attachments on behalf of each proposed T-STEM Academy.
- The application must be submitted via the online system by **5:00pm, March 4th, 2016**
- A campus must be designated prior to the beginning of the school year in order to operate as a T-STEM Academy for that year. T-STEM Academy approval is valid for a maximum of one year. T-STEM Academy designated must be applied for each year via the TEA T-STEM designation process.

**Timeline & Process:**

- March 4th, 2016: Applications are due to TEA in order to open a campus as a designated T-STEM Academy during the 2016-2017 school year.
- June 2016: Districts submitting applications by March 4th, 2016 will be notified of the selection or non-selection of the campus as a designated T-STEM Academy on or about June 2016. Applications submitted prior to the March 4th, 2016 deadline may be approved prior to June 2016.
- The district will receive a notification letter of selection or non-selection for each campus it proposes to operate as a T-STEM Academy.

**Required Attachments:**

- **Official signature:** Official signature of a district or charter official authorized by the local board to bind the applicant organization in a legally binding contractual agreement.

**Required Supporting Documents:**

- The Academy must have current versions of the following documents on file.
- Each applicant is required to provide an assurance that each of the supporting documents is current for the 2016-2017 school year, signed by all parties, and provides detailed information regarding the specific assurance.
  - **Dual Credit MOU**
  - **Professional Development Plan**
  - **Business/Industry Agreement**
  - **2016-2017 Master Schedule**

**Questions:**

T-STEM Program Manager
tstem@tea.state.tx.us

# Required T-STEM Academy Design Program Elements

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**The following design elements are the minimum requried components that must be demonstrated through this application in order to be designated as a T-STEM Academy:**

- The T-STEM Academy must serve grades 9 through 12 and may serve grades 6, 7, and 8.
- A campus must be designated prior to the beginning of the school year in order to operate as a T-STEM Academy for that year. T-STEM Academy approval is valid for a maximum of one year. T-STEM Academy designated must be applied for each year via the TEA T-STEM designation process.

**I. Mission Driven Leadership:**

- The Academy's mission statement and planned advisory board must reflect the mission and vision of the T STEM Initiative.
- The Academy must use program review and formative evaluation to achieve its mission and goals.
- The Academy must promote leadership development and collaboration within the Academy and T-STEM Network.
- For Academies that include 6th, 7th, and 8th grades, leadership teams from the middle school and high school must collaborate on a regular basis.

**II. Academy Culture and Design:**

- The T-STEM culture must foster positive student identities through meaningful adult and peer relationships.
- All students graduating from the Academy must be prepared for postsecondary coursework and careers in the STEM fields through the integration of the Governor's economic workforce clusters and AchieveTexas STEM cluster into the curriculum.
- The Academy must support all students to graduate high school with four years of math, four years of science, four years of STEM electives, an Endorsement (with a primary focus on STEM endorsements), and a Performance Acknowledgement for a Distinguished Level of Achievement.

**III. Student Access, Success,and Persistence:**

- The Academy must have a clear plan for student support and success to achieve persistence rates above 70%.
- The Academy must instill the expectation that students expand their participation and leadership in STEM activities outside the classroom and provide the opportunity to do so.

**IV. Teacher Selection,Development, and Retention:**

- The Academy faculty must possess extensive subject knowledge and integrate project based learning (PBL) and STEM pedagogy into the classroom.
- The Academy must adopt and implement a plan for sustained professional development.

# Required T-STEM Academy Design Program Elements cont.

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**V. Curriculum.Instruction.and Assessment:**

- The Academy must align curriculum, instruction, and assessment to provide students with rigorous STEM focused instruction.
- The Academy must deliver Innovative STEM programs that are well-defined, embed critical thinking and problem solving, foster innovation and invention, and are aligned to state and/or national standards, and industry expectations.
- The Academy must integrate science, technology, engineering, and mathematics throughout the curriculum.
- The Academy must continually monitor student progress through assessments and data collection.
- The Academy must promote STEM literacy and prepare students with 21st Century skills.
- The Academy must support three years of STEM electives at middle school and four years of STEM electives at high school.

**VI .Strategic Alliances:**

- The Academy must promote family involvement in student success.
- The Academy must integrate business partnerships into the curriculum and student learning experience.
- The Academy must partner with IHEs and college/career-preparation entities to ensure that students graduate with college credits and prepared for postsecondary success.

**VII. Sustainability and Advancement:**

- The Academy must have a plan for continuous improvement and growth.
- The Academy must adopt and implement a plan for sustained professional development.

## Scoring of the Application

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- Each applicant will be reviewed by T-STEM subject-matter experts from across the state.
- New applicants will be reviewed based on the proposed plan and a follow up with the applicant, if necessary.
- Each applicant will receive a notification letter from TEA indicating which designation category it has been assigned: Designated, Provisionally Designated, or Denied.
- The T-STEM Academy Design Blueprint has been consolidated in the application to highlight priorities for the planning period of designation. Applicants should focus on the benchmarks presented in answering the questions.

# PART 1: CONTACTS

## 1.1 T-STEM Academy

| | |
|---|---|
| **T-STEM Academy Name** | Robert E. Lee STEM Academy |
| **County District Campus Number** | 101911002 |
| **Mailing Address - Line 1** | 1809 Market Street |
| **Mailing Address - Line 2** | |
| **Mailing City** | Baytown |
| **Mailing Zip Code** | 77520 |

## 1.2 School District

| | |
|---|---|
| **School District name** | Goose Creek Consolidated ISD |
| **Mailing Address - Line 1** | PO Box 30 |
| **Mailing Address - Line 2** | |
| **Mailing City** | Baytown |
| **Mailing Zip Code** | 77522 |

## 1.3 Education Service Center Region

04

## 1.4 Person Completing this Application

| | |
|---|---|
| **First Name** | Lindsey |
| **Initial** | |
| **Last Name** | Marek |
| **Title** | CTE Specialist |
| **Phone** | (281) 420-4535 |
| **Email** | lindsey.marek@gccisd.net |

## 1.5 Academy Principal/Director

| | |
|---|---|
| **First Name** | Joseph |
| **Initial** | |
| **Last Name** | Farnsworth |
| **Title** | Principal |
| **Phone** | (281) 420-4535 |
| **Email** | joseph.farnsworth@gccisd.net |

## 1.6 Superintendent

| | |
|---|---|
| **First Name** | Randal |
| **Initial** | |
| **Last Name** | OBrien |
| **Phone** | (281) 420-4800 |
| **Email** | randal.obrien@gccisd.net |

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## 1.7 T-STEM Academy Partner Information

| | |
|---|---|
| **IHE Partner** | Lee College |
| **STEM Business Community Industry Partner** | Exxon Mobil; Covestro |

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## 1.8 Authorized School District or Charter Official

| | |
|---|---|
| **First Name** | Randal |
| **Initial** | |
| **Last Name** | OBrien |
| **Title** | Superintendent |
| **Phone** | (281) 420-4800 |
| **Email** | randal.obrien@gccisd.net |
| **Signature** | (Attached) |

# PART 2: BACKGROUND

**2.0 Is your campus currently designated as an Early College High School (ECHS) through the TEA ECHS designation process?** No

**2.1 First year of Academy Operation** 2015-2016

**2.2 Years in Operation** 1

**2.3 Academy Model:**
**What is the design of the T-STEM Academy requesting designation?** School Within a School - A subset of students enrolled in grades 9-12 are enrolled in the T-STEM Academy

## 2.4 Target Population

| Grades of students to be served | 6th | 7th | 8th | 9th | 10th | 11th | 12th | Total Enrollment |
|---|---|---|---|---|---|---|---|---|
| 2016-2017 projected enrollment | 0 | 0 | 0 | 70 | 60 | 30 | 0 | 160 |
| 2015-2016 enrollment (if designated in the 2015-2016 school year) | 0 | 0 | 0 | 59 | 30 | 0 | 0 | 89 |

# PART 3: BENCHMARKS

## T-STEM Blueprint Instructions

The T-STEM Academy Design Blueprint consists of seven benchmarks that drive the success of an Academy. Each benchmark highlights program requirements and offers a rubric score of developing, implementing, mature, or role model. T-STEM Academies use this tool to measure growth and progress along the continuum.

All seven benchmarks are included in the application. However, applicants may notice the program requirements are not numbered sequentially. This is because not all program requirements are included in the Designation Application. Applicants are not expected to meet or even consider all program requirements at this stage in the process. Instead, those program requirements that form the building blocks of a successful designated Academy are included in the Designation Application. Focused consideration of those particular program requirements will mean a successful applicant will have a strong foundation as a designated T-STEM Academy. The technical assistance that comes as a result of designation will allow the designated Academy to implement the Blueprint Benchmarks' full program requirements over time.

**Benchmarks 1-4, 6 & 7**
Applicants should first review the program requirements for each benchmark presented in the body of the application. The questions that follow pertain to those specific requirements (i.e. Benchmark 1 questions pertain to Benchmark 1 program requirements). Applicant responses should reflect a close consideration of the highlighted rubric areas in the context of what the campus has in place currently and could feasibly implement during the first designated year. Applications will be scored on the response's evident understanding of the continuum of growth along the rubric, evidence of existing programs, and feasible plan to move forward for each requirement.

**Benchmark 5: Curriculum, Instruction, and Assessment**
Applicants should review the program requirements presented in each section and rate the campus's existing system in the rubric's check boxes. Applicants are then asked to justify the ratings with evidence, reflection, and a plan to move forward, bearing in mind that with designation comes the tools and assistance necessary to progress along the continuum. Successful applicants will reflect an understanding of Benchmark 5 and are not necessarily expected to have all elements in place before designation.

# Benchmark 1: Mission-Driven Leadership

**Program Requirements**

| | |
|---|---|
| 1.2.C. | Develops and demonstrates support from an advisory board (AB) consisting of representatives from the Academy, school board, district, community, higher education, and STEM businesses to support and guide facility requirements, resource acquisition, curriculum development, internship, externships, and student/community outreach to ensure a successful 6-20 STEM academic and career pipeline. |
| 1.3.A. | Integrates and assesses the level of mission-driven and data-driven decision making evident in the daily work of the Academy. |
| 1.4.A. | For 6-12 campuses, middle school and high school leadership teams regularly collaborate to advance 6-12 alignment and student retention in STEM. |

**Key Elements for Success**

- Job descriptions and roles for design team, leadership team, and advisory board
- Mission is posted and can be articulated by teachers, staff, students, key stakeholders, etc.
- MOUs with T-STEM Centers

| | Developing | Implementing | Mature | Role Model |
|---|---|---|---|---|
| 1.2.C. | Advisory Board (AB) established. | AB positions and subcommittees are identified. | AB develops innovative and creative approaches to support Academy mission and vision. | AB addresses major shifts in STEM, educational standards, industry expectations, and analyzes SWOT of Academy, resulting in measurable action items. |
| 1.3.A. | Little or no evidence of data-driven and mission-driven decision making. | Data is used to design student interventions, Annual Action Plan (AAP), and to inform teaching and learning aligned to the mission. | Teachers work interdependently as teams to review data across content areas, develop targeted interventions, and develop common formative assessments. | The Academy's continual analysis of results for improvement is critical to the school's system of interventions and culture of celebration. |
| 1.4.A. | Academy leadership occasionally collaborates with each other (6th - 12th), with T-STEM centers, and T-STEM Coaches. | Academy leaders and staff collaborate with each other (6th - 12th), and with T-STEM Centers and Coaches to integrate STEM teacher preparation, teaching, and learning.<br><br>*And meets criteria from Developing* | Academy plans with regional T-STEM Center, vertical alignment teams 6th - 12th (at least quarterly), and meets with their T-STEM Coach, virtually or Face-to-Face (at least monthly).<br><br>*And meets criteria from Developing and Implementing* | Academy dialogues on a regular, ongoing basis in vertical alignment teams (6th - 12th), with T-STEM Centers and Coaches, and utilizes available T-STEM resources to improve student achievement and teacher preparation.<br><br>*And meets criteria from Developing, Implementing, and Mature* |

# Benchmark 1: Mission-Driven Leadership

- Program Requirement 1.3.A. addresses the use of data to drive design, decision making, and program review in a T-STEM Academy.
- Designated campuses will be expected to meet or exceed “Implementing” on the rubric above (Data is used to design student interventions, Annual Action Plan, and to inform teaching and learning aligned to the mission) by the end of the first designated year.

*Describe below how the campus will meet or exceed this expectation.*

During the 2011-2012 school year, Goose Creek CISD (GCCISD) implemented a STEM Visioning Committee composed of representatives from local industry, Lee College, community business partners, STEM teachers, campus as well as district administration, and school board members. This committee was provided data on STEM course enrollment and then tasked with developing a 10-year plan regarding STEM education in GCCISD. The planning process was driven by an analysis of state and local employment workforce data, Baytown-West Chambers County Economic Development Foundation data, and local industry data. One outcome of the plan was the implementation of a STEM Academy at Robert E. Lee High School (REL).

The REL STEM Academy is led by an advisory board composed of campus administration, STEM Academy teachers, Career and Technical Education (CTE) administration, students, and representatives from Lee College, Covestro (formerly Bayer Material Science) and ExxonMobil. The advisory board is charged with two tasks: respond to student needs and ensure program integrity. This board will review aggregate student performance data, enrollment data, and budgetary data. In order to respond to student needs, a Student Success subcommittee consisting of STEM academy teachers have been established. The Student Success subcommittee will meet at least once a grading period in order to address the following critical components: analysis of student performance data, identification and mentorship of struggling STEM students, and the development and implementation of enrichment opportunities based on student feedback.

The main goal of the Curriculum Integration subcommittee is to ensure the program integrity of the STEM academy. This subcommittee will meet twice a year and includes STEM teachers, core curriculum teachers, local industry representatives from ExxonMobil and Covestro, and campus administration. Specifically, this committee will focus on the quality of STEM curriculum and instruction, integration of STEM curriculum into core subjects, and providing multiple opportunities for academy students to engage in STEM activities such as internships, industry field trips, guest lectures, job shadowing, continuing education, and teacher externships.

- Program Requirement 1.2.C. details the requirements for an Academy's advisory board (AB).

*List the planned AB members and their job title (example: John Smith, School Board Member; Jan Smith, STEM Business Leader, etc.). Detail how this board will support the Academy work.*

Advisory Board (AB):
- Al Richard, School Board Member
- Renea Dillon, CTE Director
- Joseph Farnsworth, Principal
- Cap Roder, Academic Dean
- Lindsey Marek, CTE Specialist
- Misty Coyle & Keith Cummings, Engineering Teachers
- Jeanette Edmiston & Amber Hooks, Math Teachers
- Debora King & Richelle Prince, English Teachers
- James Modesett & Michael Bell, Science Teachers
- Karina Quintero, ExxonMobil Representative
- Reina Brenn, Girls in STEM Mentors Coordinator and Covestro Industry Representative
- Audrey Tran, Covestro Industry Representative
- Victoria Marron, Lee College STEM Coordinator
- Evan Richards, Lee College Pre-Engineering Professor
- Drayton Sherrill & Eliza Batongamalaki, Students
- Leslie Cushman, Parent

The advisory board develops plans for academic support, robotics team, Girls in STEM Mentoring program, guest speakers, hands-on experiences in and out of the classroom, and work-based career experiences, including teacher and student internships and job shadowing. Through effective resource allocation, the AB ensures that facility requirements are met and that the facilities meet industry standards where necessary. They provide industry input to curriculum development, including the evaluation and critiquing of various Engineering projects and to provide real-world support and input. Members of the AB also address student and parent concerns or suggestions.

Planning for the STEM Academy began with a Design Team (DT) consisting of the Superintendent, the Assistant Superintendent of Curriculum and Instruction, the Director of Career and Technical Education (CTE), and the campus principal, with guidance from the school board and local petrochemical industry. Additional LT members include the STEM CTE Specialist and campus Academic Dean. This team continues as the campus Leadership Team (LT), ensuring that the 7 T-STEM Benchmarks remain the focal point in program implementation. To support community and student outreach, the LT has also developed a plan for implementing STEM labs at every junior school campus to ensure that students and parents understand and internalize STEM academic and career information. The advisory board (AB) will meet during the first month of each semester, while the sub-committees will meet during each semester.

*Program Requirement 1.1.A: Provide the Academy mission statement below.*

The Robert E. Lee T-STEM Academy is dedicated to providing college and career readiness in STEM fields through project based learning activities that promote innovation and critical thinking.

- Program Requirement 1.4.A details the requirements for 6th-12th campuses to collaborate on a regular basis to advance 6th-12th alignment and student retention in STEM.

*Describe below how the campus will meet or exceed this expectation. If Academy is 9th-12th write, "Not Applicable".*

| |
|---|
| Not Applicable |

Texas Science, Technology Engineering and Mathematics

**Benchmark 2: T-STEM Academy Culture and Design**
**Program Requirement: 2.1 Personalization**

**2.1.A** Addresses in AAP and strategic plan the details for remaining small, allowing for personalization and maintaining collaborative learning communities of students.
**2.1.B** Plans and implements a non-graded student advisory program that is regularly scheduled, noted in the master calendar/schedule, and focuses on personalizing the student experience, (builds relationships with students and parents, develops character, and fosters global literacy).
**2.1.C** Develops a process for hearing and responding to student voice.

| Key Elements for Success | Example Artifacts |
|---|---|
| • Student IGPs w/ CCRS, Endorsements, and Performance Acknowledgement plans<br>• Master schedule for advisory<br>• Student enrollment | • Opportunities for orientation sharing and team building activities both on- and off-site<br>• Advisory class curriculum<br>• Student goal setting and reflection logs<br>• Teacher mentors assigned to students<br>• Pre- and post-assessments of advisory class goal<br>• Students sit on advisory board and/or have voice in student work products, clubs, competitions, governance, and course offerings<br>• School wide activities to build/share culture<br>• Student ambassadors serving as classroom greeters and/or guide tour groups<br>• Teacher/student ratios, actual class sizes<br>• Surveys documenting students' elective requests |

| Developing | Implementing | Mature | Role Model |
|---|---|---|---|
| 1. District and Academy resources are allocated to ensure teaching staff and facilities remain small. | 1. Annual Action Plan and Academy handbook address plan for maintaining personalized, small, learning communities. | 1. Students are regularly afforded multiple opportunities to build relationships with staff and peers such as working in academic and/or competitive teams horizontally and vertically. | 1. Protocols are developed to ensure students have a clear and documented voice in the Academy (student council, advisory committee to the director, suggestion box, etc. |
| 2. Student advisory is regularly scheduled and focuses on relationships, building school capital, developing and fostering global literacy. | 2. Advisory class has written curriculum with goals, expectations, scope, sequence, and pacing guides. | 2. Teachers work in teams to develop systemic advisory programs with horizontally and vertically aligned student outcomes. | 2. Annual resources are allocated to develop, revise, and sustain advisory program with input from students, teachers, parents, and external partners. |
| | *And meets criteria from Developing* | *And meets criteria from Developing and Implementing* | *And meets criteria from Developing, Implementing, and Mature* |

Texas Science, Technology Engineering and Mathematics

**Benchmark 2: T-STEM Academy Culture and Design**

**Program Requirement: 2.1 Personalization**

**2.1.D** Arranges for a flexible school day with blocks of time that support student learning (tutorials, collaboration, meetings).

**2.1.E** Celebrates high quality student work through student exhibits on-site, web-based, and/or in state and national forums.

**2.1.F** Provides every 6th – 12th student with an individualized STEM-focused high school graduation plan that addresses: four years of math and science; an Endorsement in STEM, Business and Industry, Public Service, or Arts and Humanities; identifies target areas for Performance Acknowledgements; and is at least annually reviewed and revised with the counselor, student, and family.

**Example Artifacts**

- Honor roll, grade level/school-wide celebrations
- Classroom and building displays
- Number of students participating in student exhibits
- Agendas/signatures for IGP meetings with students and family
- IGP, record folder/portfolio, 6th -16th course plan
- Master schedule, tutoring schedule
- Minutes/action items from site based committees, etc.
- Website showcasing student work
- Documentation of at least annual 6th – 12th IGP meetings with parents and students

| Developing | Implementing | Mature | Role Model |
|---|---|---|---|
| 1. Academy develops a flexible schedule that supports student success. | 1. Schedule is developed with input from teachers, counselors, content coaches, extracurricular and internship/capstone requirements. | 1. Teachers work in teams to adjust daily schedule to facilitate interdisciplinary PBL. | 1. Schedule is adjusted to meet student needs according to data, student, teacher, and parent voice; intervention and extension plans. |
| 2. Academy regularly schedules for students to share their knowledge and work products. | 2. Students participate in panel presentations, debates, academic fairs, webinars, online challenges, competitions, design challenges, etc. | 2. Resources are allocated to provide students with opportunities to participate in state and national forums, conferences, and competitions (financial, facilities, staffing, transportation, etc.). | 2. Academy establishes protocols with input from key stakeholders to gauge the effectiveness of student participation in competitions, challenges, etc. towards promoting college and career readiness as well as Academy goals. |
| 3. Academy develops IGP for each 6th – 12th student that addresses STEM pathways, THECB College and Career Readiness Standards. | 3. Student, counselor, and family regularly review and revise the IGP to address student goals for courses, grades, Endorsements, Performance Acknowledgements, college entrance exams, PSAT/ACT/SAT, career aspirations, etc. | 3. Annually reviews and revises IGP according to previously established protocols and timelines. | 3. Mentors are assigned to students to develop intervention contracts to address deficiencies or acceleration opportunities in IGP. |
| | *And meets criteria from Developing* | *And meets criteria from Developing and Implementing* | *And meets criteria from Developing, Implementing, and Mature* |

Texas Science, Technology Engineering and Mathematics

**Benchmark 2: T-STEM Academy Culture and Design**
**Program Requirement: 2.2 Culture**

**2.2.A** Collaborates with stakeholders to develop a new handbook or modify the existing handbook with clear procedures, policies, and consequences that support the development of a strong T-STEM culture.

**2.2.B** Involves all stakeholders in developing a culture of respect, responsibility, trust, and meaningful adult and peer relationships throughout the Academy in order to foster positive student identities.

**2.2.C** Creates a professional learning community environment of collaboration, teaming, and high expectations among administrators, teachers, and stakeholders, with a focus on and a commitment to the learning of each student.

**Example Artifacts**

- Handbook, attendance/discipline goals/data
- Customs and celebrations, modeling lessons for respect, responsibility, trust
- Student, teacher, parent surveys address culture
- Sharing of ideas and strategies and joint problem-solving are widespread.
- School developed common vocabulary for evidence of "good teaching"
- PLC protocols and expectations (meeting times, book studies, goals, results based on interventions, reflections on results – new actions, etc.)
- Collaborative planning of learning and teaching activities
- Widespread teamwork involving teachers and support staff
- Peer walkthroughs, lesson evaluations, and critical friends reflections

| Developing | Implementing | Mature | Role Model |
|---|---|---|---|
| 1. Handbook is developed to address student, parent expectations and a culture of respect, responsibility and trust. | 1. Handbook addresses key tenets of cultural beliefs of Academy (student ability and achievement, efficacy and effort, power, distributed leadership, cultural sensitivity, proactive and reflective practice, etc.). | 1. Handbook is developed with input from key stakeholders with clear policies, procedures, and consequences (attendance, discipline, student contracts, teacher extended days, etc.). | 1. There is a high degree of commitment to school-wide professional values and a strong sense of cohesion and consistency of approach, with protocols to analyze, build, and assess effectiveness of culture. |
| 2. Professional Learning Community (PLC) is developed which supports staff devoting effort, energy, time, and resources into incorporating valuable new strategies into their practice. | 2. An inquiry-based continuous improvement orientation to practice is pervasive, with data informing practice and learning widely shared. | 2. Staff regularly and consistently plans together, collaborates and shares ideas through meetings, website resources, teaming, team teaching etc., and garners input from external experts. | 2. A desire to do the best for *all* students pervades the school as evidenced by protocols for regular and deep school-wide dialogue about good teaching, assessment, learning, projects, and successes of individual students. |
| | *And meets criteria from Developing* | *And meets criteria from Developing and Implementing* | *And meets criteria from Developing, Implementing, and Mature* |

# Benchmark 2: T-STEM Academy Culture and Design

- Applicants should consider the program requirements listed above as they pertain to a student's individualized learning experience.

*Describe the campus's efforts to support students to reach this goal. This description should include plans for: an advisory period, a positive school culture, enhanced relationships with parents, and responding to student voice.*

The STEM Academy is a pocket academy within Robert E. Lee High School (REL). It is currently limited to 75 students per grade level, and for the 2016-17 school year, will consist of a total of 160 9th-11th grade students. Plans for growth up to 100 students per grade level are in the long-term plan for the academy, but in order to maintain a personalized learning experience for students, that expansion will not take place until a strong program has been established.

All students in the STEM Academy have their own Individual Graduation Plan that includes the STEM endorsement (or other endorsement if appropriate) and performance acknowledgements. Annually, students will have the opportunity to review and adjust their educational goals as they fine-tune their post-secondary plan through learning experiences.

One way in which the campus will ensure that students will personalize their learning experience is through an advisory period that will meet once per week after school. During this time, students will participate in structured college and career planning sessions. Students also have the opportunity to be involved in EvoLEEtion, a school science club, as well as the Girls in STEM Mentoring program, and the Robotics team. All of these opportunities allow for extra guest speakers, advisement on Engineering projects from professionals, college-career readiness skills, and leadership and team building activities. A positive school culture exists at REL high school, and the STEM Academy students continually benefit from the whole campus culture as well as the STEM-focused culture of the pocket academy. Students are engaged in many campus-wide events during the school day that promote engagement and positive relationships between parents, students, and faculty and staff. An example of these activities include campus-wide student activities that are shared through social media sites. Often times, these are videos that span the campus, including all teachers and staff, alumni to promote the legacy of the campus, which is a historical landmark in Texas. All STEM teachers, including the academy teachers have a sign outside their classroom designating the teacher as a STEM teacher to create a greater awareness of the academy and increase STEM awareness. The campus will celebrate the STEM academy by hosting a STEM Academy Showcase for the community, business partners and parents. This will enhance the relationships with stakeholders as well as to build the confidence of the academy students. Additionally, as the students' curriculum advances through the coherent sequence of engineering course, they will host exhibits and demonstrations during lunches. Students will always have a voice in the curriculum and activities that make up the STEM Academy. The Advisory Board (AB) has developed a form for the academy website that students can fill out to provide some suggestions, which will be reviewed by the AB. Two student representatives will serve on the AB to provide input. The 3rd year PLTW specialization course, Environmental Sustainability, was based upon the primary interest of students and the recommendation of the advisory board.

*Applicants should consider the program requirements listed in the "Benchmark 2 Program Requirements" link above as they pertain to postsecondary college and career success.*

- 6th-12th STEM-focused high school graduation plan: IGP with Endorsement, Performance Acknowledgement, and Distinguished Achievement.
- 6th-12th STEM career and college exploration, and college readiness preparation with students and parents to include college transition plan.
- Collaboration with IHE.
- All students should graduate with 12-30 hours college credit and be prepared for postsecondary coursework in STEM fields.

The Goose Creek CISD (GCCISD) Board of Trustees is deeply committed to student achievement and maintains high expectations for college and career readiness. Therefore, a policy has been developed to ensure all students entering GCCISD high schools will begin under the Distinguished Level of Achievement graduation plan, which includes earning an endorsement and successfully completing Algebra II. All eighth grade students participate in a District-wide Endorsement Day. Community and business leaders are actively involved in this event to help support the endorsement selections from students. GCCISD Endorsement Day is a celebration of 8th graders choices for high school endorsements and college/career pathways. In addition, all ninth grade students meet with their counselor to review an individualized graduation plan, which aligns with the student's endorsement and career pathway.

The Robert E. Lee STEM Academy is embedded in a school-wide culture of college and career readiness. This culture is fostered through initiatives implemented by site-based committees such as AVID (Advancement Via Individual Determination) and the Lee ILT (Instructional Leadership Team), which involves both parent and business representatives. In order to accentuate and ensure the interconnectedness of the STEM Academy and college readiness initiatives implemented at REL, STEM Academy teachers are members of these site-based committees and have a strong voice in the decision-making process. Through a partnership with Lee College, REL students have access to more than 20 dual credit courses. STEM Academy students and all other REL students have open access to a multitude of Advanced Placement (AP) courses. STEM Academy students and all other REL students have the opportunity to earn 12 to 30 hours of college credits by the time they graduate from high school.

- Program requirement 2.2.C. highlights the importance of a strong Professional Learning Community for the success of all students.
- Review at the rubric continuum and tools in Example Artifacts from a successful Academy.

*Describe how the campus will use these tools to progress into a "Mature" campus over time. "Staff regularly and consistently plans together, collaborates and shares ideas through meetings, website resources, teaming, team teaching, etc., and garners input from external experts." This description may include inquiry-based approaches, data informed decision making, Professional Learning Communities, collaboration, and integration of technology.*

Our STEM Academy teachers currently meet once a month during a scheduled Professional Learning Community (PLC) in order to plan, collaborate and share ideas with each other. Next year, the instructional calendar will include one full day per six weeks for PLCs to meet. This collaboration provides opportunities for teachers to co-teach lessons, align activities, share instructional strategies and maintain an appropriate level of rigor within the STEM Academy.

Technology is very important at our school and the STEM Academy. GCCISD issues iPads to all high school students, and these are used to help increase the level of engagement and relevance of learning in the classroom. In addition, all teachers have a Promethean Board in their classrooms (interactive, touch screen device) for this same purpose. REL High School recently purchased TI Nspire CX CAS calculators, Nspire iPad apps for students, and Nspire software for STEM students and teachers to enhance learning in STEM math classes. REL High School also received the Apple Distinguished School Award for 2015-2017. The Apple Distinguished School Award is a designation given to campuses that highly utilize and integrate technology in the classroom (e.g. iPads are used as an instructional tool to transform the students learning experience).

Staff members collaborate with district level specialists to sustain and support the integrity of curricular and instructional practices. During Curriculum Preview and Planning (CPP) meetings, faculty utilizes data to make informed decisions about the academic needs of students. Through the advisory board meetings, the team identifies resources to support instruction that aligns with industry standards.

Texas Science, Technology Engineering and Mathematics

**Benchmark 3: Student Outreach, Recruitment, and Retention**
**Program Requirement: 3.1 Recruitment and 3.2 Open Access**

**3.1.A** Develops structures and processes for marketing and recruitment to encourage participation from underserved students and families (transportation or plans for transportation to the school, child care for family events, and translation of all recruitment and marketing materials).
**3.1.B** Actively partners with feeder middle and/or elementary schools to develop student interest in STEM education and to increase advancement rates from middle school STEM to high school STEM.
**3.1.C** Develops a systemic recruitment plan that includes students, parents, counselors, teachers, district, and community.
**3.2.A** Develops an admission policy to include an open access, lottery-based selection process that encourages applications from all students. The application will not be based on state assessment scores, discipline history, teacher recommendation, minimum GPA, or other requirements that would be used to limit selection.
**3.2.B** Consists of a population that is 50% or greater economically disadvantaged and underrepresented students.

| Key Elements for Success | Example Artifacts |
|---|---|
| • Written admission policy and application with lottery explained | • Recruitment schedule and locations (schools, churches, community centers, etc.)<br>• Brochures and marketing items in English, Spanish, and/or relevant second language<br>• Survey data (community input, enrollment trends, etc.)<br>• STEM feeder school crosswalk recruiting curriculum<br>• Plan to recruit with feeder schools<br>• Documented support efforts (transportation, child care, etc.)<br>• Needs assessment<br>• Number and percentage of students matriculating from middle school STEM to high school STEM |

| Developing | Implementing | Mature | Role Model |
|---|---|---|---|
| 1. Academy details a plan and process for marketing to and recruiting from appropriate communities and feeder schools to reach high need and underrepresented students. | 1. Marketing and recruitment plan developed with input from key stakeholders, and targets feeder pattern, community needs, and cultural relevance. | 1. Marketing plan highlights Academy's STEM pathways and Endorsements; and industry and higher education partners. Recruitment efforts include Academy staff, students, and parents. At least 80% of 8th grade MS STEM students matriculate to HS STEM Academy. | 1. Students and staff from Academy collaborate with feeder schools to develop, deliver, and monitor recruitment results from STEM crosswalk engagement lessons conducted at the feeder middle schools. At least 90% of 8th grade MS STEM students matriculate to HS STEM Academy. |
| 2. Academy has at least 50% economically disadvantaged and underrepresented students, via an open, lottery based admission policy, where the application *does not* include requirements that might deter students such as STAAR, grades, teacher recommendation, discipline, or attendance. | 2. Clearly communicated admission policy that indicates target enrollment goals and implements support processes structures such as transportation, child care, etc. to meet goals.<br>*And meets criteria from Developing* | 2. Academy tracks enrollment data and indicates some increases in recruitment/enrollment rates.<br>*And meets criteria from Developing and Implementing* | 2. Academy employs a needs assessment to analyze demographic trends to ensure equitable access and recruitment of greater than 50% economically disadvantaged and underrepresented students and sustains a full complement of students at each grade level.<br>*And meets criteria from Developing, Implementing, and Mature* |

Texas Science, Technology Engineering and Mathematics

**Benchmark 3: Student Outreach, Recruitment, and Retention**

**Program Requirement: 3.3 Student Support and Retention**

**3.3.A** Develops and implements systemic, tiered strategies for student support and retention (outreach, early intervention strategies, mentoring, tutoring, counseling, and other supports for academic and socio-emotional growth).

**3.3.B** Hosts 5th – 6th and 8th – 9th orientation session(s) and summer bridge program(s) to facilitate successful student transitions and retention into a STEM-focused, college preparatory, project-based learning environment.

**3.3.C** Provides all students with opportunities and the expectation to assume roles of responsibility within the classroom, Academy, and community.

**3.3.D** Supports and monitors 6th – 12th student participation in STEM activities both within and outside the classroom to ensure that all students engage in STEM clubs, STEM competitions, and STEM field experiences.

**3.3.E** Hosts parent seminars to develop deep understanding and commitment to the rigor of college readiness and the high expectations of a STEM Academy.

**Example Artifacts**

- Student, parent, staff contracts
- Student retention and persistence plan
- Orientation and bridge agendas
- Exit interviews
- IGPs Minutes from persistence meetings, retention/attrition data
- Program adjustments due to student and community voice
- Copies of trainings and participation of parents/community
- Satisfaction/interest surveys from students, parents, community, staff, etc.
- Lists of clubs, service learning projects, STEM activities, STEM field experiences, and planned competitions

| Developing | Implementing | Mature | Role Model |
|---|---|---|---|
| 1. Academy develops a strategic plan for student retention and persistence, and maintains persistence rates above 70%. | 1. Student persistence rates range between between 70-80% and the strategic plan addresses research-based supports such as annual IGP review, parental involvement, tiered interventions, and cultural relevance. | 1. Student persistence rates range between 81-90%, and the strategic plan includes yearly metrics, analysis of why students leave, and a plan to identify and prevent at-risk students from leaving. | 1. Campus engages in ongoing dialogue to address persistence data (lack of course credit, leaving the Academy) and uses data to ensure persistence rates above 90%. |
| 2. Academy develops student orientation/summer bridge program(s), student clubs, and plans for external STEM activities and competitions. | 2. The orientation/summer bridge program sets priorities and includes a timeline with skills, tools, and resources for students to successfully transition to a STEM environment. | 2. The orientation/summer bridge program is implemented as planned and continually refined annually, with a complete scope and sequence and supporting materials. | 2. The orientation/summer bridge program monitors initial student success, identifies struggling students early on, and ensures those students have additional support. |
| 3. Students can select from a small number of leadership opportunities available. | 3. The staff encourages students to select leadership opportunities. | 3. The staff monitors student involvement in leadership and STEM activities, clubs, and competitions; and develops interventions for students who have minimally participated. | 3. Student leadership is evidenced in nearly every non-classroom related initiative or event and at least 90% of students participate in leadership and/or STEM activities, clubs and competitions. |
| 4. Academy creates STEM Academy orientation for parents and stakeholders. | 4. Opportunities exist for parents and stakeholders to participate in service learning, and/or attend student presentations. | 4. At least bi-annual opportunities exist for parents and stakeholders to participate in STEM activities. | 4. Annual parent and stakeholder participation goals are developed and monitored for continued improvement. |
| | *And meets criteria from Developing* | *And meets criteria from Developing and Implementing* | *And meets criteria from Developing, Implementing, and Mature* |

## Benchmark 3: Student Outreach, Recruitment, and Retention

- Review Program Requirement 3.1.A/B/C and 3.2.A/B.

*Describe the Academy's open-access admission policy, the marketing, and recruitment plan to parents, students, and the community; and partnering with feeder schools to increase advancement rates in STEM from elementary to middle to high school.*

The STEM Academy at REL High School guarantees open-access to all students. All students are eligible to apply for the academy. A recruitment timeline, which aligns with the GCCISD 8th grade transition timeline, was developed collaboratively by a team consisting of the Director of Guidance and Counseling, Director of Career & Technical Education and T-STEM Academy information is included in the Endorsement Training presentations for students, parents, faculty and staff. Marketing is critical to the success of the program, and input was gathered from all stakeholders so that the STEM Academy would be presented in a positive and effective manner. Along with marketing, a process was developed to include specific timelines for recruitment, applications, student selection, and student notification. Recruitment activities were conducted at all GCCISD junior schools on several occasions. For example, campus leaders provided STEM Academy presentations to all eighth grade students during the Program Recruitment Presentations. The STEM CTE Specialist hosted a Parent Information Session during the GCCISD Career Night as well as an 8th grade parent information night at REL. Parents were able to conference with our Academy Specialist to help answer questions and concerns related to the STEM Academy. A STEM Academy brochure was distributed to students in order to advertise and recruit for the program. The STEM Academy is representative of district demographics. There are 89 students in the STEM Academy for the 2015-2016 school year and 28 of these students are identified as economically disadvantaged.

- STEM Academies host orientation, summer bridge, and college preparatory seminars for parent and students; encourage student leadership, monitor student participation in STEM activities, clubs, competitions and field experiences; and develop intervention plans for students who minimally participate.
- STEM Academies maintain persistence rates above 70%, with a goal of at least 90%

*Describe the campus plan to progress to "Mature" on the continuum for Program Requirement 3.3 Student Support and Retention (review the "Benchmark 3 Program Requirements" link at the top of this page).*

The student recruitment and application process will include an addendum to obtain additional information from students to ensure that all students are aware of the high levels of rigor and expectations for the STEM Academy program. The current application does not include requirements that might deter students, such as grades, teacher recommendations, or excused absences. This encourages, rather than discourages, all students to apply for the STEM academy. A lottery system was used this year to determine entrance into the STEM Academy . Transportation is provided to students in the academy, regardless of specific zoning, which will facilitate in-district transfers without affecting students form low income families.

GCCISD has implemented STEM labs at all five junior school campuses in order to continue to provide extension of services through STEM instruction. Many STEM activities take place for students and parents throughout the year, which help promote a sense of community and a college-going culture. STEM Academy students have the opportunity to engage in a multitude of activities and events, including the following: Robotics team membership; Career-based field trips; STEM Mentoring program; STEM college tours; Campus-wide STEM day; and fish camp. Other opportunities include joining the National Technical Honor Society, EvoLEEtion Science Club; Girls in STEM Mentoring program, and STEM Student Ambassadors.

Specific plans are in place to help support and retain students in the STEM Academy. A CTE Specialist has been assigned to monitor student success. Students who are at-risk for any reason will meet with the CTE Specialist and/or a STEM advisor to address specific needs and provide academic and emotional support. Currently, the REL T-STEM Academy is proud that we currently have a 92% retention rate. The campus will continue to support the academy students, ultimately having cohorts graduating from our rigorous, enriching STEM Academy.

# Benchmark 4: Teacher Selection, Development, and Retention

| | |
|---|---|
| 4.1.E. | Provides opportunities for ongoing professional development to improve teachers' content knowledge, technology embedded instruction, integrative STEM pedagogy, college and career readiness standards, instructional strategies for ensuring a successful P-20 pipeline, and leadership capacity. |
| 4.2.A. | Develops a Professional Development (PD) plan for a sustained professional development model of continuous learning based on student results, teacher development, and the short- and long-term goals of the Academy. |
| 4.2.B. | Adopts a systemic professional development model of continuous learning that addresses prioritized needs as informed and evaluated by multiple sets of quantitative and qualitative data (student assessment data, instructional/classroom evaluations, technological developments, workforce demands, demographic changes, and community/societal expectations and needs). |
| 4.2.C. | Sustains a PLC by instituting job-embedded ongoing opportunities for continuous learning, peer coaching/mentoring, STEM externships, and participation in STEM teacher and leader cadres for teachers and administrators (research-based practices, content competence, new instructional strategies, technology integration, reflective inquiry, and student artifact analysis). |
| 4.3.C. | Adopts and implements a plan for new teachers to include orientation, induction, acculturation, mentoring, professional development, and administrative support. |
| 4.3.D. | Designs or employs innovative programs to support the recruitment and selection of highly qualified STEM teachers. |

**Key Elements for Success**

- Master schedule with common planning time
- Teacher turnover rate
- Teacher mentoring program
- Written recruitment plan

| | Developing | Implementing | Mature | Role Model |
|---|---|---|---|---|
| 4.1.E | Academy has authority to hire "best" qualified for goals of the Academy and STEM blueprint requirements. | Develops a written plan for creative recruiting to ensure high qualified, effective teachers. | Develops annual needs assessment and actively implements a teacher recruitment and placement program. | Resources are allocated for recruitment of best qualified candidates, with the Academy partnering with teacher preparation programs such as UTeach, to recruit highly qualified teachers for Academy needs. |
| 4.2.A.<br>4.2.B. | Develops PD plan with clear pedagogy expectations, aligned with mission goals, teacher needs, and student needs | Academy regularly uses diverse assessment tools/processes, enhanced media, adult learning theories, professional reflection time, problem-solving protocols, and self-paced learning with computer and human interaction for support, coaching, mentoring, and collegial interaction. | Needs assessment and PD plan address teacher and student retention to include teacher, student, and parent voice in decision-making process. | Meaningful partnerships with external organizations ensure progressive expectations for educators' application of content knowledge, curriculum design, and delivery. |
| 4.2.C. | Develops a PLC plan that identifies ways in which teachers will work in collaborative teams to build shared knowledge and formative/summative data. | Teachers collaboratively develop 6th - 12th common essential student outcomes which reflect their efforts to build shared knowledge regarding best practice, (STEM integration, college and career readiness, 21st century skills,). | Teachers collaboratively clarify the criteria they use to judge quality of student work and criteria is consistently applied horizontally and vertically. | Teachers participate in externships and mentorships with higher education and industry. PLC plan is annually monitored, evaluated, and revised for effective practice. |
| 4.3.C | Develops an Orientation plan aligned to Academy mission and vision, and teacher enculturation. | Induction plan addresses Academy expectations for instructional skills; interactions with students, parents, and community; classroom management; assessment of learning; technology; professional development; and mentoring. | Induction process is clearly enunciated, consistently practiced, and evaluated and revised for effectiveness. | Each new teacher participates in the induction process, is assigned a mentor teacher, understands the strategic goals of the Academy, and completes a Needs Assessment that identifies areas for individual professional development. |
| 4.3.D. | Common planning time within the school day focuses on PLC collaboration. | Teams develop team-time norms, set goals, and evaluate effective use of team-time for curriculum development, student artifact reflection, parental involvement, etc.<br><br>*And meets criteria from Developing* | Teams develop common metrics to measure and inform, in order to identify strengths and weakness in their individual practice, and to collaboratively improve their individual and collective efforts to help all students learn.<br><br>*And meets criteria from Developing and Implementing* | Collaborative school-level planning is judged effective as evidenced by student learning outcomes.<br><br>*And meets criteria from Developing, Implementing and Mature* |

## Benchmark 4: Teacher Selection, Development, and Retention

- Review program requirements for benchmark 4 in the link above.

*Describe how the Academy will recruit, support, and retain highly qualified teachers. This should include plans for:*

- Teacher recruitment and retention plan
- Sustained professional development (PD) plan which incorporates project-based learning and an integrated STEM curriculum into instructional practices based on qualitative and quantitative student data. (A timeline of planned PD will be uploaded in Benchmark 7.)
- A job-embedded Professional Learning Community with common planning times for collaboration.
- New teacher support (new to Academy and/or teaching profession).

Teacher selection, development and retention are critical to the success of Lee High School STEM Academy. The district hired a Career and Technical Education (CTE) specialist the year prior to opening the academy to focus on program development and teacher recruitment. The CTE specialist was able to work with existing campus staff to identify teachers who have the ability to support integrated instruction and curriculum to support student development in STEM. The CTE Specialist also completed a needs assessment in the STEM area and staffing needs were identified. These positions were approved in order to increase STEM participation. GCCISD currently provides math and science stipends to recruit and retain top notch staff.

A Project Lead the Way (PLTW) District Steering committee was developed, which includes representatives from the campus, district, industry and community. This committee developed the plan to address professional development needs, curriculum choices for electives, and the overall direction of the academy. The collaboration and industry support was exceptional. Discussions for internships, job shadowing and in-class instruction were facilitated. During the summer, academy staff develops the outcomes for students in their area of study. The district works closely with PLTW to ensure that we are meeting the level of rigor and preparing our students for future employment and programs of study, which is a part of the Professional Development Plan. Our engineering teachers attend the PLTW Core Training at University of Texas-Tyler. We will work diligently with them in order to gain a better relationship to provide other opportunities for our students. Teachers also participate in Project Based Learning (PBL) training, Integration of Technology in the Classroom, PLTW Conference, National Career Academies Coalition, Effective use of Budget Allocations, English Language Learners, Writing Across the Curriculum and Special Education trainings that are very beneficial to the teachers. In addition, the high school has Professional Learning Communities (PLC) time built into the schedule. STEM Academy Teachers meet 3 1/2 hours bi-monthly to ensure instructional needs at the campuses are met. This is a great opportunity for staff to analyze and discuss qualitative and quantitative data in relationship to curriculum, planning, instructional needs, student needs and expectations.

# Benchmark 5: Curriculum, Instruction, and Assessment

**Example Artifacts: 5.1**

- Course syllabi, lesson plans, unit lessons, PBL, scope, sequence, pacing guides
- Lessons include STEM standards, state standards, national standards, college and career readiness standards, 21st century skills
- Benchmark schedule, course passing rates, retention rates
- Student portfolios, IGPs, counseling, advising, college crosswalk, and feedback loop
- Plans for PSAT, Accuplacer, TSI, CTE, interventions, etc.
- Horizontal and vertical alignment of curriculum
- Students graduate with Endorsements & Performance Acknowledgements

| **In Benchmark 5, all program requirements are scored individually. There are no separate metrics. Assess the level of implementation for the program requirements below according to the standards to the right.** | | **Developing** Investigate, Research, and Create | **Implementing** Formalize, Revise, and Publish | **Mature** Data-driven evaluation of effectiveness of program requirements | **Role Model** Continually assesses to document successes and challenges with action plans implemented to correct deficiencies in performance |
|---|---|---|---|---|---|
| **5.1.A.** | Aligns curriculum, instruction, and assessment (such as, but not limited to, Texas CCRS, national and state standards, content, context, culture, cognitive level, competencies, skills, processes, 21st century skills, and STEM synthesis). | *Mature* | | | |
| **5.1.B.** | Develops a scope, sequence, and pacing guide for a vertically and horizontally aligned curriculum centered on state standards, career and college readiness standards, STEM integration, and industry expectations. | *Mature* | | | |
| **5.1.C.** | Develops an assessment and intervention plan to address gaps in student achievement and areas for extension. | *Mature* | | | |
| **5.1.D.** | Supports and encourages all students to successfully complete four years of mathematics, four years of science, four years of STEM electives, and at least one Endorsement in STEM, Business and Industry, Public Services, or Arts and Humanities, with a primary focus on a STEM Endorsement; and earn a Distinguished Level of Achievement as well as a Performance Acknowledgement in order to graduate college ready. | *Mature* | | | |
| **5.1.E.** | Offers dual credit, articulated concurrent enrollment, AP or IB courses that all students will graduate with 12-30 college credit hours. | *Role Model* | | | |
| **5.1.F.** | Establishes curriculum expectations, monitoring, and accountability mechanisms that are reflectively revised to ensure a constancy of mission purpose (aligned resource allocation, integrated STEM curriculum development, teacher professional growth, and student results). | *Mature* | | | |

## 5.1 Rigor

- Review the program requirements for Benchmark 5.1 Rigor on the previous page.

*Describe how the Academy will progress along the continuum. This should include plans for:*

- Alignment of curriculum and instruction as supported by assessment
- Assessment/intervention or acceleration plans for students
- Plan for four tears of math, science, and 12-30 college credit hours (dual credit/AP/IB)
- HS Endorsements available to Academy students

Goose Creek CISD has established an expectation that all incoming high school students will graduate with both an endorsement and the Distinguished Level of Achievement. Each incoming student is provided an Individual Graduation Plan, that includes four years of math and science, including Algebra II. Upon entering 11th grade, students will then choose the university STEM pathway or the community college STEM pathway for their electives.

Project Lead the Way (PLTW) curriculum is being used in the STEM Academy. Students will enroll and complete Introduction to Engineering (IED), Principles of Engineering (POE) and Environmental Sustainability (ES). ES is beginning during the 2016-2017 school year as an option for our 11th graders, as is recommended both by PLTW and the district's STEM steering committee. Curriculum in the academic classes is based upon the district's scope and sequence and pacing calendar, which is both vertically and horizontally aligned. Teachers in these subject areas also integrate STEM concepts and topics into their assignments to increase student interest and knowledge in STEM. Students take Pre-Advanced Placement courses during their 9th and 10th grade year. Upon entering 11th grade, Advanced Placement and dual credit courses in all core subjects are available to students. Additionally, students who are planning to enter the engineering technology and/or other STEM technology routes will have access to dual credit technical courses, including, but not limited to Process, Instrumentation, and Electrical Technologies. Therefore, all students will have the opportunity to graduate with 12 or more college credits.

The district develops a benchmarking calendar for each school year. Student assessment data is analyzed and instructional support is provided to address deficiencies through intervention that would best address individual student needs. Data also directs opportunities for acceleration and enrichment. As the STEM Academy progresses, critical evaluation of the program will take place annually to ensure maximum use of resources, including monetary and human resources, as well as curriculum documents and other instructional related resources. The campus CTE specialist is responsible for coordinating and collaborating with staff to conduct evaluations, provide feedback and maintain a continuous improvement process.

# Benchmark 5: Curriculum, Instruction, and Assessment

## Example Artifacts: 5.2

- Defined engineering coursework (Infinity Project, Project Lead the Way)
- Student journals, student presentations, peer performance assessment rubrics, and peer mentors
- Self-paced learning, student contracts, progress reports, exit interviews, parent/teacher/student conferences
- Lessons include work force clusters, expert practitioners, field-based learning, research of current issues, PBLs, guest speakers, differentiation, intervention and acceleration plans, student choice
- Number of offerings and number of students participating in co-curricular activities, clubs, academic teams, and competitions (UIL, Brain Bowl, Science Olympiad, Model UN, FIRST, BEST, Vex etc.)
- Design conceptual internships, identify STEM opportunities, business partners, scientific organizations, and universities
- IGP w/capstone project (research, annual review, and analysis)

| **In Benchmark 5, all program requirements are scored individually. There are no separate metrics. Assess the level of implementation for the program requirements below according to the standards to the right.** | | **Developing** Investigate, Research, and Create | **Implementing** Formalize, Revise, and Publish | **Mature** Data-driven evaluation of effectiveness of program requirements | **Role Model** Continually assesses to document successes and challenges with action plans implemented to correct deficiencies in performance |
|---|---|---|---|---|---|
| **5.2.A.** | Delivers innovative STEM programs that are well-defined, embed critical thinking and problem solving, innovation and invention, and are aligned to state and/or national standards and industry expectations. | *Mature* | | | |
| **5.2.B.** | Supports and encourages students to complete three years of STEM electives at middle school and four years of STEM electives at high school. | *Role Model* | | | |
| **5.2.C.** | Develops performance-based and project-based assessments aligned to these innovative programs and state/national/industry standards. | *Mature* | | | |
| **5.2.D.** | Develops and implements a plan for supporting accelerated student achievement for students with demonstrated deficiencies or proficiencies in mathematics and science, to promote all students graduating ready for enrollment in credit-bearing postsecondary courses (e.g. Algebra I enrollment by 8th grade). | *Mature* | | | |
| **5.2.E.** | Incorporates into the curriculum work-based contextual learning with a global perspective. | *Mature* | | | |
| **5.2.F.** | Participates in extra-curricular academic activities centered on science, technology, engineering, and mathematics; i.e. STEM field experiences, clubs, and competitions. | *Mature* | | | |
| **5.2.G.** | Develops 6th-12th students' portfolios of interest in: STEM capstone projects, STEM internship opportunities, and global STEM college, degree, and career explorations. Requires all high school students to complete an internship, and/or a STEM-related capstone project, presentation, and defense; primarily focused in the state's STEM-related economic development clusters (information and computer technology, energy, petroleum refining and chemical products, advanced technologies and manufacturing, aerospace and defense, biotechnology and life sciences.). | *Implementing* | | | |

## 5.2 STEM-Focused Curriculum

- Review program requirements for Benchmark 5.2 STEM-Focused Curriculum on the previous page.

*Describe how the Academy will progress along the continuum. This should include plans for:*

- Well-defined STEM programs that are aligned with state, college and career readiness, and industry standards and embed critical thinking and problem solving, and foster innovation and invention
- Three years of STEM electives at middle school and four years of STEM electives at high school. For high schools, list the CATE elective pathways and courses that support each Endorsement offered by the Academy
- Performance and project-based assessments aligned to state, college and career readiness, and industry standards
- Work-based and contextual learning in the curriculum
- STEM-focused extracurricular activities (field experiences, clubs, and competitions)
- STEM-related internships and/or senior capstone projects, presentation, and defense
- Plan for 6th-12th student STEM portfolios

The adopted curriculum for the REL STEM Academy at Lee High School is the Project Lead the Way (PLTW) engineering pathway. The PLTW courses apply engineering, science, math, and technology to solve complex, open-ended problems in a real-world context. Students learn how to apply STEM knowledge, skills, and habits of mind to make the world a better place through innovation. The curriculum influences students' post-secondary decisions and helps shape their future. The PLTW Engineering program provides opportunities to develop highly transferable skills in collaboration, communication, and critical thinking, which are relevant for any coursework or career. In Introduction to Engineering Design students dig deep into the engineering design process, applying math, science, and engineering standards to hands-on projects. In Principles of Engineering, students use engaging and challenging problems to explore a broad range of engineering topics, including mechanisms, the strength of structures and materials, and automation. PLTW provides lists of national standards in each lesson of all three programs. PLTW has taken this opportunity to evaluate how they determine and demonstrate standards alignment.

At the junior high level, the district has adopted Pitsco curriculum to provide STEM labs to students in 7th and 8th grade, which is preceded by a 6th grade Technology Applications course to introduce general technology skills. This alignment to the academy will assist in students’ understanding of STEM and the Program of Study options available to them. The foundation of Pitsco Education's curriculum methodology is built upon four key components: framework, curriculum, enablement, and environment. By developing the STEM curriculum upon these four components, they have created a consistent delivery methodology that provides quality, real-world learning experiences, and ultimately, student success in the STEM disciplines. Every curriculum title ensures that student learning remains positive and consistent in diverse school settings and is filled with the kinds of reading, writing, math, science, technology, and hands-on activities that make for a complete, educationally sound learning system and curriculum. The district has established high expectations for our students. Within the curriculum, we have developed project-based assessments and culminating activities for our students to complete in their area of study. The job-embedded programs will allow our students to receive real-life experiences.

Students are also extremely active in extra-curricular activities. The campus has a strong robotics program which is aligned to the STEM academy standards. Blarglefish, the name of our District robotics team, placed 7th in the world in 2015. In addition, our students have participated in Girls in STEM mentor day at Lee College, field trips and guest speakers. Our students in the academy will be freshmen, sophomores and juniors next year. PLTW students begin their portfolios their first year as their course notebook and progress through the four year course sequence. This collection of personal work and research will direct them towards their capstone project in their senior year PLTW course. The district is excited to see the products and experiences our students will share.

# Benchmark 5: Curriculum, Instruction, and Assessment

**Example Artifacts: 5.3**

- Peer observations, mentors, cross-curricular teams
- Walkthroughs, observations, model lessons
- Data informs scaffolding, re-teaching, and extension
- Team planning that defines student products, assessments, rubrics, and standards for cross-curricular and other PBLs, teacher research on STEM field expectations, current issues, and technology.
- Student presentations include digital materials, peer and internal/external expert evaluation
- Academy teachers have mentors at university and industry level that provide input to curriculum development
- Year-at-a-glance checklist documenting course coverage of state standards, 21st century skills, college readiness standards throughout grading period

| **In Benchmark 5, all program requirements are scored individually. There are no separate metrics. Assess the level of implementation for the program requirements below according to the standards to the right.** | | **Developing** Investigate, Research, and Create | **Implementing** Formalize, Revise, and Publish | **Mature** Data-driven evaluation of effectiveness of program requirements | **Role Model** Continually assesses to document successes and challenges with action plans implemented to correct deficiencies in performance |
|---|---|---|---|---|---|
| **5.3.A.** | Incorporates data-driven instruction. | *Mature* | | | |
| **5.3.B.** | Creates an environment for shared teacher responsibility and accountability for student learning across programs, content areas, and classrooms. | *Implementing* | | | |
| **5.3.C.** | Organizes instructional expectations around problem-based and project-based learning with clearly defined learning outcomes for students and teachers that address state and national performance standards, college and career readiness standards, and industry expectations. | *Mature* | | | |
| **5.3.D.** | Ensures teachers' use of the aligned scope and sequence and integration across the disciplines. | *Mature* | | | |
| **5.3.E.** | Ensures teachers' use of high-quality curricular materials aligned with state and national standards, college and career readiness standards, and industry standards. | *Mature* | | | |
| **5.3.F.** | Provides opportunities for students to exercise choice and voice within a relevant and rigorous context. | *Implementing* | | | |

## 5.3 Instructional Practices

- Review the program requirements for Benchmark 5.3 Instructional Practices on the previous page.

*Describe how the academy will progress along the continuum. This should include plans for:*

- Data driven instruction
- Shared teacher responsibility and accountability (PLC)
- Project Based Learning (PBL)
- Alignment of scope and sequence with state, CCRS, and industry standards
- Students exercise choice/voice within relevant and rigorous curriculum

Because of a strong, district-wide focus on data-driven instruction, the STEM Academy is already performing at the "Mature" level in this area. Academy teachers all have access to their student assessment scores by state objective through the use of Eduphoria. The data gleaned from this software allows each teacher to differentiate instruction to meet student needs. Teachers are continually provided with their student performance data from all district-wide curriculum-based assessments and benchmarks to adjust learning in order to improve student success. Data on student success is shared during professional learning community meetings so that all teachers share responsibility for student success.

Curriculum specialists, principals and assistant principals have been trained in instructional coaching and perform five (5) coaching sessions per month. This includes a pre-walk through meeting to discuss what the specialist will be looking for during the visit and a post-walk through coaching session to review the walk-through or observation. Campus administrators also conduct a minimum of five targeted walk-throughs per week, and campus-wide data from the walk-throughs are collected through the Eduphoria software system and analyzed by campus administration to determine professional development needs. Teachers who exhibit model lessons and instructional practices are asked to present to their peers as a means of continual improvement.

In May 2016, professional development on project-based learning is planned for all academy teachers so that they can begin to develop additional activities that will be integrated into their courses and across the academy. All teachers in the academy have or will experience job shadowing or externships during the summer in local STEM industries in order to develop project-based assignments. Once students begin their project-based activities and eventually their senior capstone project, representatives from our local STEM industries (Baytown is the hub for many petrochemical companies) will sit on panels to review and provide feedback to students.
All of the GCCISD academic scopes and sequences are aligned to the Texas Essential Knowledge and Skills, which are already aligned to College and Career Readiness Standards (CCRS) in each respective area. The Project Lead the Way (PLTW) STEM courses were designated as innovative courses by the state, and Principles of Engineering has been adopted as a Texas Course.
Students will be serving on the STEM Academy AB and have voice on the curriculum in the classroom. Students will also make the choice during their sophomore year as to which courses/pathway they will follow beginning their junior year. Some students may choose to stay in the PLTW course sequence; others may choose dual credit pre-engineering courses at the local community college or engineering technology courses. Before final decisions were made on the specialization course taught the junior year, students were surveyed to determine where their greatest interest lies. This, along with the AB recommendations were taken in consideration before the final decision was made to implement the Environmental Sustainability class.

# Benchmark 5: Curriculum, Instruction, and Assessment

**Example Artifacts: 5.4**

- Project Based Learning (PBL)
- Systemic expectations for number of presentations per class, documentation of students presenting to internal and external panels
- Design teams, group projects, multiage projects, simulations, robotics teams, green teams
- Project scenarios based on real-world issues (Future City, FIRST, Odyssey of the Mind, etc.)

| **In Benchmark 5, all program requirements are scored individually. There are no separate metrics. Assess the level of implementation for the program requirements below according to the standards to the right.** | | **Developing** Investigate, Research, and Create | **Implementing** Formalize, Revise, and Publish | **Mature** Data-driven evaluation of effectiveness of program requirements | **Role Model** Continually assesses to document successes and challenges with action plans implemented to correct deficiencies in performance |
|---|---|---|---|---|---|
| **5.4.A.** | Promotes instructional strategies that challenge students to think critically, innovate and invent to solve real-world, contextual problems. | *Implementing* | | | |
| **5.4.B.** | Exposes students to critical readings in STEM-related fields and requires students to demonstrate their understanding of STEM disciplines in a work-based, contextual environment. | *Implementing* | | | |
| **5.4.C.** | Offers standards-based STEM programs that incorporate integrative STEM literacy and innovative instructional tools. | *Mature* | | | |
| **5.4.D.** | Promotes applied and collaborative learning, and provides students with opportunities to present/defend their work to peers, community, industry, and university leaders. | *Developing* | | | |
| **5.4.E.** | Promotes a rich culture that incorporates a natural use of current technologies to enhance instruction, curriculum, teaching, and learning, and STEM literacy. | *Role Model* | | | |

## 5.4. STEM Education Integration

- Review the program requirements for Benchmark 5.4. STEM Integration on the previous page.

*Describe how the Academy will progress along the continuum. This should include plans for:*

- Students apply critical thinking, innovation and invention, to problem-solve real-world scenarios.
- Student exposure to STEM related fields and understanding of STEM disciplines in a work-based, contextual environment
- Students present/defend their learning (PBLs and capstone projects) to external experts
- Use of current technologies to enhance instruction, curriculum, teaching and learning, and STEM literacy

Implementing Project Lead the Way (PLTW) curriculum ensures that STEM students are challenged to become critical thinkers, innovators, and real world problem-solvers, which will be highlighted during the senior capstone course. In partnership with ExxonMobil Corporation, our Partner in Education (PIE), students are provided with many opportunities to work with local industry. Our community college is very close in proximity to our campus, and many opportunities exist for collaboration when students will need to defend their capstone projects. During our planning year, our Advisory Board specifically chose to implement the PLTW curriculum because of its problem-based and project-based activities that teach students to solve complex, open-ended problems in a real-world context. The academy will progress in the continuum of improvement as PLTW courses are added in a coherent sequence each year, culminating in Engineering Design and Development (EDD). STEM teachers will participate in teacher externships in order to integrate STEM into their student activities. Campus leadership will monitor STEM courses throughout the year in order to ensure rigorous coursework and quality instruction. The PLTW capstone course will include students presenting and defending their projects to a board of subject-matter-experts (SMEs) from the academy industry partners, including Covestro and ExxonMobil.

Specifically from the PLTW website, “The knowledge and skills students acquire throughout PLTW Engineering come together in EDD as they identify an issue and then research, design, and test a solution, ultimately presenting their solution to a panel of engineers. Students apply the professional skills they have developed to document a design process to standards, completing EDD ready to take on any post-secondary program or career.” Students and teachers alike consistently use technology in their teaching and learning. As mentioned previously, technology integration is a priority at REL High School. Our teachers have a variety of technology devices to support instruction and learning. Examples include Promethean Boards, STEM computer labs, STEM-related apps for iPads, and Texas Instrument Nspire calculators with supporting software. Our campus will continue to provide professional development that supports the integration of technology, and the STEM Academy teachers will receive specific training related to technology integration in STEM courses.

# Benchmark 5: Curriculum, Instruction, and Assessment

**Example Artifacts: 5.5**

- Academy-developed process in place to identify STEM and content relevant vocabulary and just-in-time literature
- Plan for vertical and horizontal expectations, per grade level, of STEM vocabulary and relevant literature
- Literature- and language-rich environment which includes technical language journals, articles, periodicals, current events newspapers, online resources, webinars, and texts
- STEM-focused strategies and activities such as word walls, student journals, literature circles, mock trials, student forums, debates
- Stakeholder input into selection of STEM instructional materials student goals and reflections (literacy in STEM, 21st century skills, technology, etc.)
- Integrative instruction and instructional materials

| **In Benchmark 5, all program requirements are scored individually. There are no separate metrics. Assess the level of implementation for the program requirements below according to the standards to the right.** | | **Developing** Investigate, Research, and Create | **Implementing** Formalize, Revise, and Publish | **Mature** Data-driven evaluation of effectiveness of program requirements | **Role Model** Continually assesses to document successes and challenges with action plans implemented to correct deficiencies in performance |
|---|---|---|---|---|---|
| **5.5.A.** | Promotes technologically proficient and scientifically literate students with highly developed academic vocabulary and STEM technical vocabulary. | *Role Model* | | | |
| **5.5.B.** | Graduates 21st century literate students proficient in: English, reading, speaking, writing, numeracy, arts, health, sciences, and world languages; government, civics, history, and geography; environmental science; global awareness; information, communications, and media technology; and financial, economic, business, and entrepreneurship. | *Mature* | | | |
| **5.5.C.** | Selects appropriate STEM curriculum and culturally relevant instructional materials that foster widespread use of literacy strategies within the STEM curriculum. | *Mature* | | | |
| **5.5.D.** | Provides opportunities for students to demonstrate the relevancy of the content through reading, writing, speaking, and presenting. | *Implementing* | | | |

## 5.5. Literacy

- Review the program requirements for Benchmark 5.5 Literacy on the previous page.

*Describe how the Academy will progress along the continuum. This should include plans for:*

- Technologically and scientifically literate students
- 21st Century skills-literate students
- STEM curriculum and culturally relevant instructional materials
- Academy literacy plan

Through the PLTW curriculum, students are engaged in activities that effectively integrate technology. Students develop projects that are aligned to the skill set identified through the PLTW curriculum. Within the curriculum, students are exposed to STEM vocabulary and terminology. Summer planning for the focus of study per core subject and grade level has been established. The campus has developed STEM strategies and activities, which are integrated into the core curriculum for freshmen and sophomore courses, and will continue to develop the junior curriculum this summer. For example, students in English may work on technical writing that will support the skills necessary for the Introduction to Engineering Design course. Core curriculum teachers are hand selected to participate in the STEM Academy for the purpose of supporting and enriching the STEM courses (PLTW). These teachers must be willing to align and support the STEM curriculum and activities. The CTE Steering Committee, which includes approximately 50 business partners, has outlined 21st century skills that are important for all students leaving high school. The skills that have been identified will improve student preparation for the work force. Areas that have been impacted include the following:

-English, reading, speaking, writing, numeracy, arts, health, sciences and world languages
-Government, civics, history and geography
-Environmental science, global awareness
-Information, communications and media technology-Financial, economic, business and entrepreneurship

Based upon the recommendation of the CTE Steering committee, the GCCISD Board of Trustees developed a policy that mandates the local requirement of a technology course for every high school student in the district. This is a district-wide initiative that benefits all students, including our STEM Academy students. Professional development has been provided to support the 21st century skills development for students. The integration in curriculum between our STEM classes and the core content areas allows for the widespread use of literacy strategies. Students will utilize project based learning to demonstrate knowledge of content through reading, writing, speaking and presentation skills. This curriculum is rigorous, challenging and addresses culturally relevant issues. The retention rate for the program is high and we expect to graduate students who will excel in the area of STEM.

# Benchmark 5: Curriculum, Instruction, and Assessment

**Example Artifacts: 5.6**

- Data informs instruction, plan for gaps and extension
- Curriculum aligned with standards, STEM, industry, and higher education
- Formative, diagnostic, and summative assessments, lesson redesign
- Student artifact reflection is used to inform diagnostic tools and processes
- Pre/post tests, cumulative folders, parent conferences, parent portal, student learning logs
- Pre-assessments/ post-assessments, course offerings for interventions, grades, end of course exams, student presentations, narrative assessments, oral assessments, product based assessment
- IGPs, progress reports, student information sheets, home visits, parent conferences, PEIMS info, call logs, counseling schedule/visits
- Student designed projects, project rubrics, peer reviews, panel reviews, adult/expert reviews
- Project lists knowledge and skills, 21st century skills and levels of skill mastery; course syllabus provides list of performance-based assessments; PD for teachers on developing PBLs

| **In Benchmark 5, all program requirements are scored individually. There are no separate metrics. Assess the level of implementation for the program requirements below according to the standards to the right.** | | **Developing** Investigate, Research, and Create | **Implementing** Formalize, Revise, and Publish | **Mature** Data-driven evaluation of effectiveness of program requirements | **Role Model** Continually assesses to document successes and challenges with action plans implemented to correct deficiencies in performance |
|---|---|---|---|---|---|
| **5.6.A.** | Uses diagnostic, ongoing, and vertically and horizontally aligned formative and summative assessments for all students to drive instructional decisions. | *Mature* | | | |
| **5.6.B.** | Uses state and national standards, college and career readiness standards, industry standards, and STEM program requirements to develop common benchmark assessments. | *Mature* | | | |
| **5.6.C.** | Employs student readiness assessments or diagnostics to identify and address gaps in learning. | *Mature* | | | |
| **5.6.D.** | Tracks and reports student progress using student information systems. | *Role Model* | | | |
| **5.6.E.** | Uses performance-based assessments that allow students to demonstrate their understandings of STEM concepts. | *Role Model* | | | |

## 5.6 Assessments

- Review the program requirements for Benchmark 5.6 Assessments on the previous page.

*Describe how the Academy will progress along the continuum. This should include plans for:*

- diagnostic, ongoing and vertically and horizontally aligned formative and summative assessments;
- state, college and career readiness, and industry standards alongside STEM program requirements;
- student readiness assessment to address gaps;
- student information systems to track progress; and
- performance based assessments that demonstrate student understanding of STEM concepts

Lee High School is fortunate to have PLC time built into the calendar. This calendar year, students have early release every other Friday, which allowed staff to have two hours 2 times a month to discuss curriculum and instruction. During PLC time, staff is able to review assessment data. Students are assessed using curriculum based assessments as well as benchmarks. Based on the data, we are able to make timely adjustments to address students' instructional gaps or accelerate as needed. Discussions are held across content areas that are beneficial to the entire campus. The assessments are developed by staff and district level specialists. Assessments follow district-wide timelines and instructional concepts are spiraled into lessons as we progress throughout the school year. The CTE department provides support to ensure alignment with national standards, industry standards and STEM program requirements through PLTW. The resources provided through PLTW are a great support in development of assessments. It guides teachers and identifies the standards that the students should be meeting.

The district uses Eduphoria to assist with data disaggregation. Teachers are able to generate student data reports based on each section taught, regular or STEM. Discussions during PLC's revolve around the data that has been collected and individual student needs. Remediation is critical to student success and campus educators are committed to provide tutoring and instructional support for all students. Our retention rate is... This demonstrates the support our staff has provided and the level of engagement that has driven student retention. Students have been added to the program who demonstrated an interest in the academy. Our incoming cohort has increased in size as students are being exposed to the importance of STEM-related careers and the purpose of our STEM Academy. Our STEM Academy has almost doubled in enrollment since the first year. Our district is proud of the STEM Academy's progress at REL High School.

# Benchmark 6: Strategic Alliances

## Program Requirements

| | |
|---|---|
| 6.2.A. | Identifies and secures key business, industry, and community partners to support STEM Academy efforts (mentorships, service learning projects, etc.). |
| 6.2.C. | Identifies and secures key business and industry partners to provide STEM-related job shadowing, internships, and externships for students and teachers. |
| 6.3.A | Develops a Memorandum of Understanding (MOU) for dual credit. |
| 6.3.C | Develops partnerships to support a college going culture and to provide STEM graduates access to college support services (college trips, college entrance aid, GEAR UP and P-20 initiatives). |
| 6.1.B | Provides opportunities to educate students/parents on STEM Academy expectations such as parental engagement, college connections, scholarship opportunities, mentorships, etc. |

| | Developing | Implementing | Mature | Role Model |
|---|---|---|---|---|
| 6.2.A<br>6.2.C | Initiates a few partnerships with business, community, and industry. | Initial contact made and some support is provided by community business partners. Business and industry relationships are limited to onsite mentoring activities and some minor financial support. | Partnership with business and industry is formalized via established agreements. Outcomes and expectations are concrete and regularly reviewed. Partnership is evident by two-way communication of goals and vision as to what the STEM program provides. | Each major academic area is sponsored by corporate or community partners. Industry representation is a key component of the STEM strategic planning process. Integration of Academy students in business and community activities is visible. |
| 6.3.A<br>6.3.C | Initial contact made and some support is provided by higher education organizations. Some courses are available to enhance STEM curriculum integration. | Develops Higher Ed connections to facilitate MOUs, crosswalk plans, teacher mentors, and externships. | Partnerships and MOUs with higher education communities are an integral component of Academy delivery model. | College credit is given to STEM students upon completion of academic work sanctioned by accredited colleges. Admission rates for STEM students to IHE exceed the normalized rates for all students within the sponsor school system. |
| 6.1.B | Minimal strategic communications with parents and families. | Regularly scheduled distribution of communications is planned and presented to key stakeholder groups.<br><br>*And meets criteria from Developing.* | Strategic communications are timely and are developed ad hoc as conditions warrant. Key messages are presented by leadership emphasizing the importance of the communication to the intended audiences, via community town halls, PTO meetings, advisory board meetings, and school board presentations.<br><br>*And meets criteria from Developing and Implementing.* | Real time communications are evident via communications technologies such as websites, newsletter articles, and media presentations using the community's public service forums, (public television and radio). Leadership is easily accessible and continuously engages partnerships with stakeholders in community and student families.<br><br>*And meets criteria from Developing, Implementing, and Mature.* |

# Benchmark 6: Strategic Alliances

- Review the program requirements for Benchmark 6 above.

*Describe how these strategic alliances 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.*

Baytown, Texas is on the Gulf Coast and is home to several of the largest petrochemical industries in the world, including ExxonMobil, ChevronPhillips, Covestro, Enterprise Products, and several others. Each of these companies are very active with all of the GCCISD schools, especially in the support of STEM training and activities for students and teachers. ExxonMobil serves as the Partner in Education for Lee High School and supports the STEM Academy in many ways. Additionally, only 30 minutes away is Johnson Space Center, and as the additional PLTW courses are added to the curriculum, their support will also be requested by the STEM Academy. ExxonMobil is also an active partner with the district Robotics Team, which is housed at Lee High School. The two PLTW teachers for the 2015-16 school year are the sponsors of the Robotics Team, which will greatly increase the participation of STEM Academy students. ExxonMobil also funds training for junior school and high school Pre-Advanced Placement (PAP) teachers through a partnership with the National Institute of Math and Science, which is a week-long camp during the summer.

GCCISD also has multiple partnerships with institutions of higher education (IHEs). Lee College, the local community college, is located within 1/2 mile of the high school. Lee College provides the dual credit instruction for GCCISD students, with over 20 academic courses available and multiple technical programs. Through multiple grants in which the college partners with the district, many STEM activities are provided both on the college and the high school campus, including STEM Day in the fall. The academy hopes to develop a plan to partner with the University of Houston.

Communication and involvement of parents takes place in many ways. The main form of communication is the STEM Academy web site, on which activities and notices are posted. During the application period, all marketing materials and applications are easily accessible on the web site. The campus sends home a weekly newsletter, and the STEM Academy is planning on providing monthly bulletins to be posted on the STEM Academy website. The district's Board of Trustees and the community is updated annually through presentations on all Career and Technical Education programs. Presentations on the academy are made during annual district events, such as Career Night. Other forms of communications include mail outs to academy parents and all parents in the district. The academy has also frequently used the phone call-out system to provide notice to parents of events. Parents are an integral part of the development of the STEM Academy. Input is sought and partnerships are formed to support program implementation.

## Benchmark 7: Assurances

***The following document must be attached in order for the T-STEM Designation application to be submitted.***

**Official signature:** Official signature of a district or charter official authorized by the local board to bind the applicant organization in a legally binding contractual agreement.

View Document

**Dual Credit MOU:**The district or CMO provides assurance that a Memorandum of Understanding (MOU) with an Institution of Higher Education that defines the dual credit agreement is current (for the 2016-2017 school year). The MOU must be signed by all parties and ensure that sufficient detail are included and is on file at the T-STEM Academy. The executed IHE MOU for dual credit must be available for review by TEA upon request.

☑ Assurance Provided

If the T-STEM Academy is only providing AP coursework, list the AP courses that will be taught in the 2016-2017 school year.

**Professional Development Plan:** The T-STEM Academy applying for designation, provides assurance that a Professional Development Plan detailing the types, frequency, the provider of STEM professional development to be provided during the 2016-2017 school year, and is on file at the T-STEM Academy. The professional development plan must be available for review by TEA upon request.

☑ Assurance Provided

**Business Agreement:** The T-STEM Academy applying for designation, provides assurance that a minimum of one business agreement is current (for the 2016-2017 school year), signed by all parties, provides sufficient detail regarding the role of each party, (which allows students to participate in internship programs, capstone projects, or conduct field work) and is on file at the T-STEM Academy. The business agreement must be available for review by TEA upon request.

☑ Assurance Provided

**2016-2017 Master Schedule:** The T-STEM Academy applying for designation, provides assurance that the proposed master schedule, demonstrating a commitment to STEM education, rigorous coursework including Dual Credit, AP, or IB courses, and a vertically and horizontally aligned curriculum is on file at the T-STEM Academy. The 2016-2017 master schedule must be available for review by TEA upon request.

☑ Assurance Provided