

T-STEM Blueprint



Benchmark 1: School Design

The T-STEM academy must provide a STEM focused program serving students in grades 6-12 or grades 9-12 with an active relationship with the feeder middle school(s).

Design Elements

All T-STEM academies must implement and meet the following requirements:

1. The T-STEM academy location shall be:
 - a. On a college or university campus, or
 - b. In a high school—as a standalone high school campus or in a smaller learning community within a larger high school, or
 - c. At a central location, such as a STEM or CTE center where students are enrolled in their home campus
2. T-STEM academy staff shall include:
 - a. A T-STEM building level leader with authority to make scheduling, hiring, and budget decisions
 - b. Qualified T-STEM academy teachers who work directly with the T-STEM students, which may include adjunct high school faculty capable of teaching college-level courses
 - c. Counseling staff who support T-STEM students, including activities such as: coordinating with Institutions of Higher Education (IHEs) for registration and monitoring of students' high school and college transcripts and monitoring high school and college courses to ensure all requirements are met
3. The T-STEM shall establish a leadership team that includes high-level personnel with decision-making authority who meet regularly and report to each organization. Regularly scheduled meetings must address the following topics:
 - a. Identification of members and the role each member will play in the design, governance, operations, accountability, curriculum development, professional development, outreach, sustainability, and continuous monitoring and improvement of T-STEM
 - b. Assumption of shared responsibility (between the school district, industry partners, and the IHE) for meeting annual outcomes-based measures and providing annual reports to their district and IHE boards, as well as to the public
 - c. Monitoring of progress on meeting the T-STEM Blueprint, including reviewing data to ensure the T-STEM is on-track to meet outcomes-based measures
 - d. Guidance for mid-course corrections as needed
 - e. Identification and implementation of sustainability structures to address and minimize the challenges of staff turnover and potential fluctuations in funding
4. The leadership team shall include and meet regularly—in person and/or virtually—with the leaders from the district, IHE, and business/industry who have decision-making authority:

District leaders (may include):

 - a. Superintendent
 - b. Assistant superintendent of curriculum and instruction, or equivalent position
 - c. T-STEM principal or director

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- d. CTE Director
 - e. Department chairs
 - f. School counselors
 - g. Business and industry partners
- IHE leaders (may include):**
- a. College or university president
 - b. Provost
 - c. Department Chairs for core academic disciplines
 - d. T-STEM liaison
- Business/Industry (may include):**
- a. CEO/President
 - b. Education/community outreach specialist
5. Implementation of an annual professional development plan for teachers and staff using research-based instructional strategies that focus on rigor, build college and career readiness, are based on needs assessment of student data, and includes both high school and dual credit teachers. **Professional development may include, but is not limited to:**
- a. A mentoring and induction program for newly hired staff, providing them with the instructional and interpersonal skills and capacities needed for success in a T-STEM
 - b. An externship program to expose teachers, counselors, and/or administrators to STEM content and careers
 - c. Opportunities for teachers to collaborate, plan, and engage in relevant professional development
6. Provision of opportunities for T-STEM teachers to receive extensive training and support through regularly scheduled formative peer observations and collaboration opportunities with feeder pattern focus groups, industry, and IHE partners
7. Offering of inclusive STEM activities both inside and outside the classroom for all students
8. The T-STEM academy students shall be cohorted into core classes to the extent possible; this does not exclude non-T-STEM students from enrolling in the same class
9. The T-STEM academy shall be offered at no cost to students

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Required Activities and Products

Activities

- a. All products shall be published on the T-STEM academy website and be made available to TEA upon request
- b. All products shall be maintained in accordance with local retention policy

Products

- a. Annual training and professional development calendar and plan for teachers
- b. Mentor/induction program plans
- c. T-STEM leadership meetings and agenda notes

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Benchmark 2: Target Population

The T-STEM academy shall serve, or include plans to scale up to serve, students in grades 6-12 or 9-12, and shall target and enroll students who are at risk of dropping out of school as defined by the Public Education Information Management System (PEIMS) and who might not otherwise go to college.

Design Elements

All T-STEM academies must implement and meet the following requirements:

1. The T-STEM recruitment and enrollment processes shall identify, recruit, and enroll the subpopulations of at-risk students (as defined by PEIMS), including, but not limited to, students who are of limited English proficiency, students with disabilities, or students who have failed a state administered assessment. Enrollment decisions shall not be based on state assessment scores, discipline history, teacher recommendation, parent or student essays, minimum grade point average (GPA), or other criteria that create barriers for student enrollment
2. The T-STEM shall identify, recruit, and enroll subpopulations (in addition to those who are at risk as defined by PEIMS) that are historically underrepresented in college courses (e.g., first generation college goers, students of low socioeconomic status, African American, Hispanic, Native American)
3. The T-STEM academy shall clearly document recruitment and enrollment policies and practices; refining and improving them annually based on data reviews
4. Recruitment and enrollment processes (including marketing and recruitment plans, materials, and timelines) shall include input from key stakeholders (e.g., parents and community members; postsecondary partners); target student populations as described in 1 and 2 above; and include regular activities to educate students, counselors, principals, parents, and school board and community members
5. If the T-STEM academy has more applicants than available space, they shall use either a performance-blind, open-access lottery system for admissions that encourages and considers applications from all students (all students have an equal opportunity for acceptance, regardless of background or academic performance) or a weighted lottery that favors students who are at-risk or who are part of the targeted subpopulations for the T-STEM

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Required Activities and Products

Activities

- a. All products shall be published on the T-STEM academy website and be made available to TEA upon request
- b. All products shall be maintained in accordance with local retention policy

Products

- a. Written admission policy and enrollment application
- b. Written recruitment plan including a timeline of recruitment and enrollment events, and recruitment materials for distribution at feeder schools and other appropriate locations in the community
- c. Brochures and marketing in Spanish, English, and/or other relevant language(s)
- d. Written communication plan for targeting identified audiences, parents, community members, school board, higher education personnel, etc.

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Benchmark 3: Strategic Alliances

Strategic partnerships with business and industry partners and Institutions of Higher Education (IHEs) are formally articulated in writing and clearly define a variety of STEM careers.

Design Elements

All T-STEM academies must implement and meet the following requirements:

1. The T-STEM academy shall develop, sign, and execute a Memoranda of Understanding (MOU) with IHE partner(s) to include (at a minimum):
 - a. Courses of study, which enable a student to combine high school courses and college-level courses toward credentials and certifications including associate and/or bachelor's degree
 - b. Policy for advising students on the transferability of all industry certifications and college credit offered and earned
 - c. Policy to ensure the IHE transcripts college credit earned through dual credit in the same semester that credit is earned
 - d. Policy regarding advising students as to the transferability and applicability to baccalaureate degree plans for all college credit offered and earned (college credits earned during high school should allow students to progress from an associate degree to a bachelor's degree and beyond in their chosen field)
 - e. Policies regarding eligibility of T-STEM students for financial assistance from the higher education partner(s), specifically, waivers for tuition and fees
 - f. Data sharing agreement that includes provisions for:
 - Teacher data such as qualifications
 - Student level data such as credit hours and industry certifications taken and earned; GPA, formative data to assess if student is on track to be successful in college level courses
 - g. Administration of statewide instruments under TEC Subchapter B, Chapter 39
 - h. Transportation costs and fees
 - i. Grading periods and policies
 - j. Instructional materials
 - k. Instructional calendar including location of each course that will be offered
 - l. Student enrollment and attendance policies
2. The T-STEM academy shall develop, sign, and execute a MOU that clearly define the roles and responsibilities of a strong partnership with business and/or industry partners to provide:
 - a. A detailed plan for work-based learning experiences for students appropriate to each grade level, such as facility visits, guest speakers, presentations, career information, job shadowing, internships, externships, and apprenticeships
 - b. Clear roles and responsibilities for worksite supervisors, mentors, teachers, support personnel, and other partners
 - c. Career mentoring
 - d. Support for students' activities, such as clubs, Career and Technical Student Organizations, competitions, and special initiatives
 - e. Course path and program monitoring
 - f. T-STEM students access to business and industry partners and work-based learning facilities, services, and resources

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Benchmark 3: Strategic Alliances

Strategic partnerships with business and industry partners and Institutions of Higher Education (IHEs) are formally articulated in writing and clearly define a variety of STEM careers.

Design Elements

3. The T-STEM Academy shall establish an Advisory Board who meets regularly and includes representatives from a variety of stakeholders such as; school board, community, higher education, business and industry to provide support and guidance to the T-STEM academy in resource acquisition, curriculum development, work-based learning and student/community outreach to ensure a successful academic and career pipeline

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Required Activities and Products

Activities

- a. All products shall be published on the T-STEM academy website and be made available to TEA upon request
- b. All products shall be maintained in accordance with local retention policy
- c. Annual review of business/industry and IHE MOU

Products

- a. Meeting agendas and minutes, with action items and decision logs
- b. Final, signed, and executed MOU with IHE (Campuses must submit their final signed MOU to TEA when initially applying for designation or are provisionally designated)
- c. Final, signed, and executed MOU with business/industry partner (Campuses must submit their final signed MOU to TEA when initially applying for designation or are provisionally designated)
- d. A list of strategic partners with each member's organization, title and role in providing work-based learning for students by grade level

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Benchmark 4: Curriculum, Instruction, and Assessment

The T-STEM academy shall provide a rigorous course of study that enables students to receive a high school diploma and complete industry certifications, work-based learning experiences, and/or early college credit during grades 9-12.

Design Elements

All T-STEM academies must implement and meet the following requirements:

1. The T-STEM academy shall work with the local workforce development board to identify, create and maintain a list of high-demand occupations and programs of study that lead to these occupations to be used as a resource in creating structured pathways for students and updated as local needs change
2. The T-STEM academy shall establish one or more STEM pathways, and plans are underway for sequencing additional courses for STEM students. Course pathways are informed by regional and state workforce and economic development needs and contribute to students earning credentials and certifications that prepare them for high-wage, high-demand, high-skill STEM fields
3. The T-STEM academy shall provide a course of study that enables participating students the opportunity to complete high school graduation requirements and earn an industry certification or credential in a STEM focused field
 - a. A four-year crosswalk must be in place detailing how students will progress toward this goal including alignment of high school and college level courses. This crosswalk must provide pathways to a certification, an associate degree, and/or a bachelor's degree and must follow the courses and fields of study listed in the Texas Higher Education Coordinating Board (THECB) Lower Division Academic Course Guide Manual (ACGM) and/or the Workforce Education Course Manual (WECM). The campus may implement multiple dual enrollment delivery models such as:
 - College courses taught on the college or high school campus by college faculty
 - College courses taught on the high school campus or college campus by qualified high school faculty
 - College courses taught virtually, via distance/online/blended learning
4. The T-STEM academy shall biannually implement a structured data review process designed to identify student strengths and weaknesses and develop individual instructional support plans
5. The T-STEM academy shall provide a TSI assessment to students as early as possible (but not as a prerequisite to admissions)
 - a. The T-STEM academy shall develop a plan for test preparations for TSI, SAT, and/or ACT success, including academic preparation classes for students, interventions for students who do not pass TSI, and assessment fee waivers for all administrations of the TSI
 - b. The T-STEM academy shall review TSI, SAT, and ACT testing data, particularly the number/percentage of students who have currently passed each section of the TSI assessment, to ensure the T-STEM is on track to meeting outcomes-based measures
6. The T-STEM academy shall provide support for students taking STEM courses preparing students to obtain industry certifications, licenses, etc.
7. The T-STEM academy shall work with IHEs and business and industry partners to ensure curriculum alignment between high school, postsecondary and industry experience requirements

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Required Activities and Products

Activities

- a. All products shall be published on the T-STEM academy website and be made available to TEA upon request
- b. All products shall be maintained in accordance with local retention policy

Products

- c. Four-year crosswalk document
- d. Master schedule
- e. Curriculum alignment documents
- f. Testing calendar and schedule for TSI, ACT, and SAT
- g. Documentation detailing a minimum of three course of study examples that outline student pathways from high school, to associate degree, to industry certifications and beyond

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Benchmark 5: Work-Based Learning

The T-STEM academy must offer students a variety of relevant, high-skill work-based learning experiences at every grade level that respond to student interest and regional employer needs contributing to students earning STEM-focused industry certifications and credentials.

Design Elements

All T-STEM academies must implement and meet the following requirements:

1. The T-STEM academy shall collaborate with the Local Workforce Development Board to define local workforce needs in STEM careers
2. The T-STEM academy shall have current, signed MOUs with business/industry partners that are reviewed annually and clearly articulate the requirements outlined in this benchmark
3. The T-STEM academy shall provide:
 - a. Appropriate work-based learning for students in the T-STEM academy at every grade level that includes career awareness, career exploration, career preparation, and career experience
 - b. Policies and protocols to make work-based learning a viable method for helping students meet academic standards
 - c. Work-based learning experiences that are well-planned and properly sequenced to provide a progression of learning experiences for students—each one building upon the last
 - d. Work-based learning may include, but is not limited to: facility visits, guest speakers, presentations, career information, career fairs, informational interviewing, job shadowing, internships, mentoring, and apprenticeships
4. The T-STEM academy ensures that students:
 - a. Understand the connection between their work-based learning and academics
 - b. Are provided opportunities to reflect on their work experiences
 - c. Demonstrate their learning in writing, portfolio, presentation, digital or by other means

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Required Activities and Products

Activities

- a. All products shall be published on the T-STEM academy website and be made available to TEA upon request
- b. All products shall be maintained in accordance with local retention policy

Products

- a. Documentation of appropriate work-based learning experiences available for students at all grade levels (6-12)
- b. Current dated regional high demand STEM occupation list
- c. Aggregate data describing T-STEM student participation in work-based learning experiences as well as percentage of students earning industry certification and credentials by type
- d. Samples of student artifacts such as writings, portfolios, presentations, or links to digital content

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Benchmark 6: Student Support

The T-STEM academy will provide wrap-around strategies and services involving multiple stakeholders (parents, teachers, counselors, community members, etc.) to strengthen both the academic and technical skills necessary for high school and college readiness, as well as provide academic, technical, and individual support for students to be successful in rigorous academic and work-based learning experiences.

Design Elements

All T-STEM academies must implement and meet the following requirements:

1. The T-STEM academy shall provide layered academic support to the students by personalizing the learning environment in the following ways:
 - a. Developing individualized, STEM focused student plans with specific graduation plan for ongoing academic support
 - b. Providing academic support for intervention, remediation, and acceleration
 - c. Providing tutoring and/or Saturday school for identified students in need of academic support
 - d. Providing advisory and/or college readiness and support time built into the program of study for all students
 - e. Providing students with application, financial aid counseling and college/career counseling
 - f. Providing bridge programs (an intensive academic preparation program that provides opportunities to strengthen academic skills necessary for high school and college readiness) and to support student transition from middle school to the T-STEM program (as well as elementary to middle school, if applicable)
 - g. Establishing a mentorship program available to all students
 - h. Providing resources for career support including career exploration, work-based learning, and industry certifications for high-wage, high-demand, high-skill STEM fields
2. The T-STEM academy shall provide layered social and emotional support to the students as needed such as:
 - a. Connections to social services
 - b. Parent outreach and involvement opportunities
 - c. A structured program of community service to promote community involvement
 - d. Skill building instruction for students, such as time management, study skills, collaboration and interpersonal relationship skills
 - e. The T-STEM academy shall provide enrichment and extra-curricular opportunities such as clubs, Career and Technical Student Organizations, competitions, and special initiatives
3. The T-STEM academy shall provide enrichment and extra-curricular opportunities such as clubs, Career and Technical Student Organizations, competitions, and special initiatives

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Required Activities and Products

Activities

- a. All products shall be published on the T-STEM academy website and be made available to TEA upon request
- b. All products shall be maintained in accordance with local retention policy

Products

- a. Bridge program calendar and curricula
- b. Tutoring and other intervention/remediation program schedules
- c. Calendar of family outreach events
- d. Schedule of regularly scheduled counseling/advisory events and records of completion for these support services

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Access Outcomes-Based Measures			
Data Indicators	Provisional	Designated	Distinguished
Requirements	Must meet at-risk students for incoming 9th graders and at least three additional target population data indicators. Middle schools must meet two measures	Must meet at-risk students for incoming 9th graders and at least three additional target population data indicators. Middle schools must meet three measures	Must meet at-risk students for incoming 9th graders and at least four additional target population data indicators. Middle schools must meet four measures
T-STEM academy proportionate to or over-represents at-risk students for incoming 9th graders	No more than 20% points under district	No more than 15% points under district	No more than 10% points under district
T-STEM academy proportionate to or over-represents African American students	No more than 10% points under district	No more than 5% points under district	Meets or over-represents district
T-STEM academy proportionate to or over-represents Hispanic students	No more than 10% points under district	No more than 5% points under district	Meets or over-represents district
T-STEM academy proportionate to or over-represents economically disadvantaged students	No more than 10% points under district	No more than 5% points under district	Meets or over-represents district
T-STEM academy proportionate to or over-represents females	No more than 10% points under district	No more than 5% points under district	Meets or over-represents district
T-STEM academy proportionate to or over-represents ELL and SWDs	Not taken into account for designation	Not taken into account for designation	No more than 5% points under

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Attainment Outcomes-Based Measures			
Data Indicators	Provisional	Designated	Distinguished
Requirements	Must meet college math or science , and 15 college credit targets	Must meet targets on at least five attainment data indicators	Must meet targets on at least six attainment data indicators
Grade-to-grade retention by subgroup (weighted)	Not taken into account for designation	TBD	TBD
Completing one college-level math or science course by end of 12th grade (any)	80% of students (by the fourth year of implementation)	90% of students	100% of students
Participating in a Work-Based Learning placement/course by graduation	35% of STEM focused students (by the fourth year of implementation)	50% of students	75% of students
Earning 15 college credits (any) by graduation	50% of students (by the fourth year of implementation)	80% of students	95% of students
Earning postsecondary degree and/or credential by high school graduation	Not taken into account for designation	30% of students	40% of students
Earning an industry certification by graduation	10% of STEM focused students (by the fourth year of implementation)	20% of students	30% of students
Graduating high school in 4 years (4-year cohort graduation rate)	Not taken into account for designation	Meets the statewide 4-year graduation rate	Exceeds the statewide 4-year graduation rate

Achievement Outcomes-Based Measures

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Data Indicators	Provisional	Designated	Distinguished
Requirements	Must meet two TSI achievement data indicators	Must meet at least four achievement data indicators	Must meet at least five achievement data indicators
TSI College Readiness Standards in reading	65% passing rate	70% passing rate	75% passing rate
TSI College Readiness Standards in writing	75% passing rate	80% passing rate	85% passing rate
TSI College Readiness Standards in math	50% passing rate	60% passing rate	75% passing rate
Algebra I EOC assessment in 9th grade	Not taken into account for designation	85% of students passing	45% percent of students passing and meeting the advanced standard
College Readiness benchmarks on SAT or ACT	35% passing rate on one or more college readiness benchmarks	40% passing rate on one or more college readiness benchmarks	50% passing rate on one or more college readiness benchmarks