Pittsburgh Science & Technology Academy

Pittsburgh Public Schools | EXCELLENCE FOR ALL

Dream. Discover. Design.

Introducing the Pittsburgh Science & Technology Academy

Welcome to the Pittsburgh Science & Technology Academy: where any student with an interest in science, technology, engineering or math can develop skills for a career in life sciences, environmental sciences, computing, or engineering.

The Academy isn't just a new school. It's a new way to think about school.

Our curriculum is tailored to students who have a passion for science, technology, engineering or math.

Our environment is one of extraordinary support for students, parents, and faculty.

And we exist to provide opportunities, every day, for students to Dream. Discover. Design. Every day our students will set goals and generate ideas, research and discover answers, and design real solutions for the kinds of real-world problems that they'll face after graduation. We promise to do our part to prepare them for their future, whether they go on to higher education or immediate employment.

Sixth–Ninth Grades: Guided Exploration

In grades six through nine challenging experiences get students excited about science, technology, engineering, and math while teaching the skills needed for advanced courses later in the program. Students set goals, learn to structure and solve problems, and explore connections between science, math, and engineering careers and their communities.

Unique courses include Great Problems in Biology, Chemistry and Physics, Specialized Mathematics, Career Prep, Research Methods, Web Design, and more.

Tenth and Eleventh Grades: Focused Discovery

In grades ten and eleven students get to focus their studies in an area of interest. They can choose from the Life Sciences, Environmental Sciences, Computer Science or Engineering. Each of these exciting focus areas is a series of deep experiences in courses like Electrical Design, Organism Interactions, or Chemical Analysis.

The Twelfth Grade: Authentic Design

The whole program prepares students for four special twelfth grade courses. These courses simulate professional experience in science, technology, engineering, and math. The highlight is The Executive Experience, an advanced research and design project completed on a team, in partnership with a real university or industry partner.

Providing Personalized Support

Our environment is one of extraordinary support for students, parents, and faculty.

For students, there is plenty of support for those who need it and plenty of advancement opportunities for those who are ready to move ahead. An innovative schedule provides each student the time and resources they need, and a caring faculty advisor guides each student through the program.

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For families, a Parent and Family Center welcomes them into the school community while a faculty advisor provides a consistent point of contact.

For teachers, professional development is relevant and personalized. They are skilled professionals, and they are treated that way.

Focusing on the Future

College and career preparation starts early. Students take specific career preparation courses. They participate in a Science Forum with professional scientists and engineers. And the entire college and job application process is built into the school day. The result is that every student selects the college or career opportunity that is right for them well before graduation.

Rethinking the School Day

Each morning includes two eighty-minute academic periods. For example, a student might have Geometry then Biotechnology, or Regeneration Science then Physical Education.

In the middle of the day students have a lunch and activity period. This period is flexible, with options including personalized academic support, advanced individual research, or a club or activity that is typically offered after school.

The afternoon includes two more eighty-minute academic periods. For example, a student might have World History then Web Design, or Prototyping then African American Literature.

Demonstrating Collaborative Innovation

In all, more than 250 individuals and dozens of organizations contributed to the development of the Academy, and to Dream. Discover. Design.

For three years experts from local universities, community organizations, foundations, companies, and volunteers gave hours of their time and talent, collaborating with Pittsburgh Public Schools staff to help create a school that would become a model for science, technology, engineering, and math education.

Applying is easy!

In 2009 the Academy will open with 250 students in grades 6-9. It will grow to serve 550 students in grades 6-12. Due to the limited number of openings, students are admitted to the school through a weighted lottery.

For more information, or to apply to the program:

- **Visit** www.pghscitech.net
- **Call** 412.622.7920
- **Or visit** the Pittsburgh Public Schools magnet office:
  341 S. Bellefield Ave. Pittsburgh, PA 15213

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Introducing the Future of Science and Engineering Education

Want to see high school students studying ozone impact, gene transfer, material cycles, signal processing, solar energy, electrical design, robotics, and more of the most exciting and dynamic fields of science and engineering?

The Pittsburgh Science & Technology Academy's four science focus areas take students far beyond traditional high school science, engineering, and computing experience, introducing them to skills and ideas that are usually reserved for college. Challenging projects and focused classes prepare them for the types of real problems they will face in rapidly changing fields from Programming to Environmental Engineering.

Of course, students are not limited to careers in the sciences. They complete their program ready to pursue practically any opportunity—in science or in another area of interest. They learn how to work hard, solve problems, and Dream. Discover. Design.

Encouraging students to pursue their passion

Every student at the Academy selects a focus area, or "concentration" at the end of their 9th grade year. There are four choices (Life Science, Environmental Science, Computer Science, and Engineering), each one offering a series of courses totally unique to the Academy.

In every one of these exciting focus areas students Dream. Discover. Design. They set goals and generate questions. They perform real research. And they apply their research to projects like the ones that real scientists and engineers tackle every day.

Presenting a new way to learn

Collaborative discovery and design replaces traditional instruction, and the four focus areas replace the traditional sequence of Biology, Chemistry, and Physics. Students still earn credit for these courses, but the structure is reformatted so that students learn the essentials of science, engineering, and computing in a way that is challenging, culturally responsive, modern, and fun.

Teachers are subject experts, and the Academy's freshly renovated facility is located in the heart of Oakland, Pittsburgh's university district. Surrounded by experts and innovators, students interact with real scientists on a regular basis.

With the school population limited to 550 students, there are a limited number of spaces available in each concentration. So in some cases students may not get their first choice. Luckily, the four concentrations are designed to include common experiences, and ensure that all students graduate prepared for success in any field of science, technology, engineering, or mathematics - or in something completely different! Students complete their concentration ready to succeed at the best colleges and in the most exciting careers.

Preparing for College and Careers

Science, engineering, and computing courses are not the only new experiences introduced at the Pittsburgh Science & Technology Academy. Students also get to prepare for and select a specific college or career opportunity—an opportunity that will continue the pursuit of their personal interests and professional goals.

Specific courses and support systems help students start thinking about their life after high school early in the program. Teachers and advisors guide them as they set ambitious college and career goals and support them as they research and pursue their plan. There is even time built into the schedule for students to actually apply to the opportunity that they choose!

The following innovations complement the rest of curriculum, which is already designed to be full of hands-on projects and connections to real-world challenges.

The "Executive Experience"

The Executive Experience is a real-world work experience in science, engineering, or computing. Students work on project teams with a real client, a university research team, organization, or industry partner, tackling a real problem. They manage the project, interact with the client, and perform real research, making a meaningful contribution to their field and community. The Experience is part of students' 12th grade year, but they start preparing for it as soon as they enter the Academy.

Career Prep and Career Tech

In sixth and ninth grades students develop career skills such as keyboarding, presentation skills, and software applications including word processing, spreadsheets, and basic web page development and research through assignments that require career research, goal setting, and portfolio maintenance.

Postsecondary Prep 1 and 2

These courses include SAT and ACT preparation, college and job searching, essay writing, professional writing and professional speaking, résumé building, financial aid applications, and more. Students even fill out their college and/or job applications as part of these classes.

The Advisory Program

Every student has a faculty advisor. The advisor helps students set college and career goals, schedule courses, effectively use the flexible third period, and determine how much time they need to prepare for the advanced courses. The advisor is a consistent point of contact for the parents or guardians of their advisees.

The Science Forum: Integrated Science Seminars

This regularly scheduled forum explores the relationship between Physics, Chemistry, and Biology as well as Earth and Space Science in a format that brings in experts and scientists from industry groups and university partners for lectures, panels, debates, and presentations.

Providing Personalized Support

Any motivated student can succeed in this challenging science, engineering, and computing program, but different students will need different amounts of time and support. Several elements of the program work together to make sure that those who need personalized support will find plenty of it, and those who need advancement opportunities have the chance to move ahead as they learn to Dream. Discover. Design.

The Advisory Program

Every student has a faculty advisor throughout the program. They stay with their first advisor from sixth through eighth grades, and their second advisor from ninth through twelfth. The advisor helps students set college and career goals, schedule courses, effectively use the flexible third period, and determine how much time they need to prepare for the advanced courses. The advisor is a consistent point of contact for the parents or guardians of their advisees.

Advisory groups will meet with their faculty advisor each Wednesday during third period.

Personalized Promotion through Innovative Scheduling

Courses are offered in three different lengths to maximize student choice and scheduling flexibility. Each math course is offered in semester and yearlong versions in the 80-minute block schedule. Thus, students who require additional time or support may take a yearlong math course with a significant amount of time built in for support and individualized intervention.

Exceptionally advanced students can finish the high school program in three years if they choose to do so while students who need more support can take an extra year to prepare for their advanced coursework without failing or repeating any classes.

Third-Period Support and Enrichment Program

Period 3 is a 100-minute lunch and activity period that is used for academic support, fun activities and advanced enrichment. Students who are falling behind in a class can access on-demand support. Advanced students can do independent research or access enrichment opportunities. Clubs and competitions are another option for students in third-period. It is organized by quarter, making it possible for all students to participate in up to four different support or enrichment activities during each school year. Opportunities respond to the needs of students in a fun, non-credit bearing period within the school day.

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Pursuing a Passion

Students at the Academy focus their studies in one of four areas after they finish the ninth grade. They tackle relevant challenges in dynamic, high-paying, and rapidly changing fields of science, technology, engineering, and computing.

In each concentration, students go far beyond the traditional high school experience in a series of eight courses unique to the Academy. Some of these courses are short, in-depth experiences that last for one-quarter of the school year. Others last for a full semester. All are 80 minutes per day, so there is plenty of time for collaboration and hands-on investigation.

The challenging, focused classes prepare students for the types of real challenges they will face after graduation, whether they pursue a career in science, engineering, computing or another area of interest.

Computer Science

With the key building block of computational thinking, students create computer-based animations and graphics. Web-based projects lead to rigorous courses in programming and computer science geared towards scientific research. Advanced courses apply students' skills to the creation of complex applications with real world relevance.

Engineering

Taking a materials science perspective, and relying on Computer-Aided Design (CAD), students confront challenges in mechanical and structural design. With the addition of electrical systems, students develop the knowledge and skills to be consultants, bringing a product or structure that meets a societal need from an idea to reality.

Environmental Science

Using a systems approach, students grapple with the complexity of interactions in ecological systems. Focusing on atmospheric phenomena, energy transformations and material cycles allows students to understand interactions between humans and the environment. Case studies enable students to evaluate decisions in real-life situations.

Life Science

Considering life at a variety of organizational levels, students explore the implications of the molecular unity of life. From information storage and cellular function to organismal diversity and community organization, students apply genomics to start addressing the most pressing biological problems on Earth.

Introducing a Great Place to Teach

Academy teachers are skilled professionals, and they are treated that way. They participate in the development of the courses they teach and select the activities they lead. They have the time and support necessary to improve instruction, analyze student work, and communicate with families. And they get to make a real impact. They get to help a diverse and motivated group of young adults prepare for the world's best opportunities in science, technology, engineering, and math.

Teachers share responsibility for the success of every student as they provide daily opportunities to Dream. Discover. Design.

Leading an Involved Community

The Academy is a unique community, and teachers are its leaders. They lead a community united by a common interest in science, technology, engineering, and math, and a determination to see Pittsburgh students rise to the top of these competitive fields.

In addition to being experts in their academic discipline, Academy teachers are advisors, facilitators, and project-managers. Time for these responsibilities is built into the carefully designed master schedule, and teachers are paid for an eight-hour professional day.

Benefiting from Personalized Professional Development

Professional development at the Academy is a personalized process built around hands-on learning, high expectations, and Dream. Discover. Design. Every teacher has the flexibility to shape their development time, set and monitor their development goals, and complete work that is relevant to their classroom.

Each teacher has a minimum of 80-minutes of personal planning time built into their schedule every day. An additional period of collaborative lesson study and personalized professional development is built into their schedule for one quarter of each school year.

Participating in Course Development

Since so many unique courses are offered at the Academy, time is built into teachers' schedules for the development of courses they will teach in later years. This means extra eighty-minute planning periods, access to the resources and support necessary to develop hands-on units, and guidelines provided by curriculum developers and local subject experts.

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Building Positive Relationships

Every teacher is also a faculty advisor, with time for advising built into their weekly schedule. They get to follow the same small group of students from 6th through 8th grades or from the 9th through 12th grades. Advisors develop the personal relationships that are so important to student success, and they help students set and monitor goals, make decisions, and keep their families informed.

Using Time Wisely

A typical day consists of four eighty-minute academic periods. Some teachers lead classes in three of these four periods. Others, those who have additional responsibilities such as developing a new course for example, only lead classes in two of these four periods.

The four academic periods surround a flexible period in the middle of the day. Part of this period is for lunch. The rest, about 60 minutes, is for academic support, independent research, or a club or activity that would typically be offered after school.

The schedule has been carefully designed, with specific offerings planned through 2013. Teachers will know exactly what they are scheduled to teach over the next five years, so they will have plenty of time to plan and to participate or lead course development.

Finally, the eight-hour professional day means that teachers are paid for forty-minutes of time beyond the student day.

Producing Measurable Results

With flexibility, time, and empowerment come high expectations. The Academy expects to help every student complete advanced coursework, choose a specific college or career opportunity before they graduate, and demonstrate the ability to Dream. Discover. Design. The educators, volunteers and contributors to the development of the Academy expect the school to become a national model for science, technology, engineering, and math education and they understand that excellent teaching is the key to achieving this vision.

Application Process

For more information, or to apply to the program:

- **Visit** www.pghscitech.net
- **Call** 412.622.7920
- **Or keep an eye on** www.pps.k12.pa.us/employment, where positions will be posted as they open.