STRATEGIES
The long-range vision for The STEM Innovation Academy of the Oranges (the Academy) is to create an early college model for STEM education that unites public and private sector to provide better options for our students and that strengthens the continuum from high school to college to careers. The Academy provides a fully integrated STEM education model using engineering design, mathematical analysis, and scientific investigation to leverage the natural connections between STEM subjects while offering multiple pathways to post-secondary study. Its mission is to provide students, underrepresented in STEM college majors and careers, with a personalized pathway towards mastery of the skills and knowledge that they will need to make the transition from secondary education to college and industry. The STEM Innovation Academy of the Oranges considers college admission and completion the goal for all students.

School Profile

The STEM Innovation Academy of the Oranges is a highly-innovative 4 year program spanning grades 9-12 resulting from the joint collaborative between The City of Orange, the Orange Public Schools, the New Jersey Institute of Technology (NJIT), The College of New Jersey, and Montclair State University. The Academy exemplifies an early college model whereby students, from grade 9 on, navigate through a four-year scope and sequence of high school and college coursework. The school operates on an extended school day model with students attending from 8:20am – 3:30pm; teachers, from 8:05am – 4pm. Students will earn college credits toward a degree in one of three majors - Computing Sciences, Mechanical Engineering, or Biomedical Engineering. All curricula are aligned with the Common Core State Standards or the Next Generation Science Standards as the foundation for learning in higher education institutions with strong mathematics, science and engineering programs.

The Components

The Academy provides students with a high school to college to career continuum that helps them understand the direct links between what they are learning today and the worlds of college and work. While the Academy is a comprehensive school, it embodies a few unique core components.
Focus on Early College: Student learning is focused from grade nine on, through a four-year scope and sequence of high school and college coursework.

In June of 2017, the Orange Public Schools district entered into a formal agreement with the New Jersey Institute of Technology (NJIT). The purpose of the agreement was to define the procedures for a non-exclusive program providing Orange’s qualified high school students from the STEM Innovation Academy of the Oranges with the opportunity to take college courses to accrue forty college credits during the regular academic year at the STEM Innovation Academy of the Oranges; pending the availability of qualified faculty at the school, and access to specialized equipment and facilities. These credits include general university requirements (GURs) and some first and second year major requirements all of which are generally transferable to most two- and four-year colleges in the U.S.
Focus on Project Based Learning

The Academy hopes to spark a transformation of teaching and learning by offering a combined Design Thinking and project-based learning approach in grades 9-12; while emphasizing the “soft-skills” necessary for today’s workplace – skills in collaboration, communication, creativity, problem-solving, and perseverance. Project-based learning is a dynamic approach to teaching in which students explore real-world problems and challenges. With this type of active and engaged learning, students are inspired to obtain a deeper knowledge of the subjects they’re studying. Design thinking provides another potential form of teacher scaffolding to help craft these experiences.

Student demonstrates his team’s custom-made apparel using recycled materials; Summer 2017
**Focus on Calculus-Based Majors**
Calculus serves as the foundation for many college students to help them understand complex mathematical computations. Many college STEM majors require Calculus (Calculus with Analytic Geometry, Stats, Probability, and Differential Equations) as a part of a comprehensive curriculum. In grades 9 – 11, mathematics programs are offered year-round to focus heavily on the development of mathematical literacy to help address this concentration.

**Focus on Careers**
Students participate in an ongoing, sequenced workplace learning curricula informed by current industry standards. The curricula include setting career goals, mentoring, guest speakers, workplace visits and internships. Minimum requirements for entry-level IT jobs, developed in collaboration with our industry partners, will be mapped to the curriculum and will serve as academic benchmarks and targets.
Focus on Personal Pathways
Each student moves through a personalized academic pathway that is closely monitored by his or her teachers and advisors, and based on individual needs and performance. While the school meets all state mandates for graduation, the pace at which the student moves through the high school and college requirements is personalized, and the requirements’ sequences are intricately intertwined. While all students are expected to meet high school requirements and earn their respective credits, some may proceed at an accelerated pace. The Accuplacer, the PARCC, the Eng10 PARCC exam, or the PSAT offered in 9th and/or 10th grade will be used to determine whether a student is ready to begin college level coursework.

Extended Learning Time
In addition to extending college level coursework into what has conventionally been the high school years, the school day and year (via summer planning) also are extended beyond the traditional schedule to include even more individual support for students.

Specialized Staffing
In order to ensure that the model is adequately supported, the Academy includes the full-time position of an Industry Engagement Officer to work directly with the leadership, staff and students. In this way the model is continually monitored to ensure effective practice. Additionally, industry experts will be recruited to work with the school’s lead teachers and subject teachers through programs such as TEALS (Technology Education and Literacy in Schools), Real World Connections (RWC), etc.

Inclusive Admissions Process
Application to the Academy is open to all grade eight students. The Academy is specifically dedicated to providing college and industry access to historically underserved students. Admissions criteria include PARCC performance, portfolios, multi-year transcripts, references (teacher/parent/student), panel interviews, and individual and group performance tasks.

No Cost to Families
Because the Academy is public and is designed to serve students from historically underrepresented backgrounds, access to no-cost postsecondary credits helps remove a critical financial stumbling block and helps students focus solely on learning.
Active Learning Spaces

The shift from passive to active learning creates a need to support the integration of pedagogy, technology, and space. Our classrooms reflect an active learning ecosystem that offers a range of settings and the choice and control to select the best environment for the learning; while considering options for adjacency, visual and acoustic privacy, and collaboration. This includes 3 instructional modes: computer work (focused work environments), talk with others (collaborative environments), making something (hands-on project work environments). Collectively, these environments offer

- Dynamic movement
- Interchangeable configurations
- A mixture of specialized spaces: makers’ spaces, engineering, digital design, etc.
- And zero distance design

- Height-adjustable worktables and rolling chairs
- Furnished alcoves, and corridors
- White board walls