# **Advanced Career STEM Pathway Academies**

High schools and technology centers are being challenged like never before to prepare youth for their next steps after graduation, whether those steps include earning a credential or degree or securing a good job right away.

Co-designed with state leaders, postsecondary educators, employer partners and master teachers, each of SREB's **nine Advanced Career pathways** consists of four courses that help students master readiness standards and cultivate the critical thinking, problem-solving, communication and applied academic skills employers value.

AC courses introduce students to exciting careers in varied STEM (science, technology, engineering and mathematics) fields. All AC courses are taught in the context of a collegeready academic core and include fully developed lesson plans, assessments, projects and supplies.

# Career Academies — A Proven Strategy for Engaging Students

Research shows that **career academies** — small learning communities in which students take academic and technical courses as a cohort with dedicated academy teachers — not only help students transition to college, but also improve their labor market outcomes, according to studies conducted by MDRC.

#### Nine Advanced Career Pathways

- Aerospace Engineering
- Automated Materials Joining Technology
- Clean Energy Technology
- Energy and Power
- Global Logistics & Supply
  Chain Management
- Health Informatics
- Informatics
- Innovations in Science
  and Technology
- Integrated Production Technologies

In career academies that meet national standards for best practices, teachers and counselors integrate career exploration and advisement into daily or weekly lessons. Community and employer partners offer experiential learning opportunities that allow students to apply what they learn in the classroom in different real-world settings, try out careers, gain hands-on experience and build communication and teamwork skills.

# The AC STEM Pathway Academy Network

High schools and technology centers that join SREB's **AC STEM Pathway Academy Network** find that career academies naturally complement their existing efforts to improve instruction and engage students. SREB has also found that AC academies can serve as a catalyst for organizing other programs around an academy design in schools that have not yet adopted a comprehensive school improvement framework.

SREB customizes AC academy designs to suit the unique needs of comprehensive high schools, shared-time regional technology centers and community and technical colleges that adopt AC.

With SREB supports and related services, network schools design one or more college- and career-preparatory pathways for students in grades nine through 14 or 16 that are grounded in these design principles:

- AC courses and assessments align with a college-ready core.
- Academies follow the 10 key features described on the following page, which align closely with National Career Academy Coalition National Standards of Practice.
- Schools assemble an AC Support Team for AC STEM Pathway Academies that includes an assistant principal, a counselor, and literacy, mathematics and science teachers.
- Academic and career pathway teacher teams share common planning times and cohorts of students.
- AC academies partner with postsecondary institutions and business and industry leaders.

Network schools also ensure that students complete the fourcourse AC sequence; provide access to high-quality dual enrollment courses and industry certifications; and strive to deliver instruction in varied settings — including at the high school, at a technology center or at an area college.

SRER



"Managers from Toyota Motor Manufacturing West Virginia who have visited my AC Integrated Production Technologies class say this is the first time they've seen this level of advanced manufacturing instruction in a high school technical center."

## West Virginia IPT Teacher

Southern Regional Education Board



### The Origins of Advanced Career

SREB's 2009 report, *The Next Generation of School Accountability*, challenged educators to broaden the definition of academic rigor to include career pathway programs that connect college-ready academics with a sequence of rigorous career and technical education courses in which meaningful problems, projects and assignments encourage students to explore careers and master literacy and math skills.

SREB and its state partners used this report as a blueprint for creating **Advanced Career**, which helps young people transition to postsecondary programs and the workplace.

## Services for AC STEM Pathway Academy Network Schools

All AC STEM Pathway Academy Network schools receive professional development, coaching and technical assistance designed to help them adopt these 10 key features:

- 1. Design career pathway programs of study in STEM in which the four AC courses offered in high school align with postsecondary programs leading to an associate degree or higher.
- 2. Ensure that the college-ready academic core is taught through intellectually demanding, standards-driven assignments that connect with AC course projects, where appropriate. The college-ready academic core includes four courses each of college-prep English and math and at least three lab-based science courses.
- Partner with local postsecondary institutions to offer at least the third and fourth courses in each four-course AC sequence as dual credit to students who meet readiness benchmarks.
- 4. Identify industry sponsors who can review student work and provide a range of work-based learning experiences for each AC STEM pathway.
- 5. Establish a master schedule that allows students to take classes as a cohort and gives AC teachers and dedicated math, science and English teachers time to co-plan lessons that connect academic and technical standards and align with AC projects.
- 6. Select the best teachers to teach AC pathway courses. SREB has found that the best AC teachers can come from any discipline; what they share in common is a passion for teaching, a knack for technology and a willingness to learn.
- 7. Design a system of counseling for careers and college that complements AC pathways. In this system, students and parents participate in orientation sessions about available AC pathway programs and learn about career opportunities related to those pathways. Students regularly engage with professionals in the field.

#### What Students Say About AC

**Students love AC.** In 2017 surveys, nearly 90 percent of students agreed that AC projects are intellectually demanding and require them to use math to complete. About 80 percent reported they liked AC's hands-on projects and wanted to take all four courses in the AC sequence. And nearly three-quarters said that AC helped them form a career goal.

"Students are more interested in mastering academic content when they can use it to solve real problems that relate to their own lives. Authentic projects are the key to showing students how to apply what they learn in the classroom to new situations."

#### Gene Bottoms

Senior Vice President, SREB

- 8. Build district- and building-level support for AC teachers to ensure that they have the supplies, technology, lab space and classroom space needed to teach AC courses.
- 9. Use end-of-project and end-of-course summative assessments, frequent in-project formative assessments and student survey data to continuously improve instruction.
- 10. Require AC teachers to participate in AC's two-week Summer Teacher Training Institute. Master AC teachers engage new AC teachers in completing class projects and understanding the academic and technical content, technology and project-based pedagogy of each course. Ongoing support includes coaching, webinars, tech support, assessment reports and networking opportunities.

