Key Features of Advanced Career

Fully Developed Pathway Programs
Advanced Career (AC) STEM Pathway Academy curricula encompass a coherent sequence of four ready-to-implement courses, comprehensive training for teachers, access to tools and technology for project-based learning, and end-of-course assessments. To ensure fidelity from site to site, each course has a syllabus that includes instructional philosophy, instructional delivery and support systems, assessment and a recommended grading system.

Advanced Career Programs of Study
Each AC program of study is a progression of non-duplicative courses joined with a college-ready academic core and aligned from high school to postsecondary studies — grades nine through 12 or nine through 14. The integration of academic and technical content in each program of study prepares students for more options after high school graduation, offers opportunity for dual credit and leads to an industry-recognized credential, advanced training, or an associate or bachelor’s degree. The high-skill, high-wage career fields represented among the AC programs of study are important to the economy.

Project-Based Learning
Each course is designed around a series of projects — featuring essential questions, project descriptions, authentic roles and tasks that require students to utilize an industry-recognized decision-making process. Assignments in AC courses encompass essential elements of good project-based learning to engage students in an extended process of asking questions, using resources and developing answers. Students collaborate and work in teams and develop important 21st-century skills.

Connected Learning Experiences
AC course work creates rigorous blended learning experiences for all students. Students apply their academic and technical skills to real-world projects in ways that advance their literacy, mathematics, science and technical knowledge and skills, and strengthen their habits of behavior and mind for success.

Technology and Software
Students employ industry-standard data acquisition hardware, software, robotics and control systems to complete authentic tasks simulating the work of professionals in the field.

Assessments
Each project includes formative and summative assessments. Each course has an end-of-course assessment that measures both academic and technical achievement with the performance level needed for jobs, advanced training and postsecondary credit-bearing courses. In addition, students and teachers complete surveys about what works or does not work in the AC program of study. This serves to inform continuous improvement.

Counseling for Careers
Student and parent orientation to each AC program of study highlights the career field, including requirements for jobs and postsecondary study in the career field. Each AC course has a career and education exploratory component. Counselors trained to support the AC program of study will assist students in developing a career plan aligned with students’ goals and aspirations.

Teacher Selection, Professional Development and Support
Teachers are selected who have strong mathematics skills and experience in the pathway career field. Staff development is essential and includes an intensive two-week summer institute for teachers to prepare them to teach each course and to use a project-based approach. They will perform students’ assignments and use the tools developed by national industry partners. A support team including the principal, counselor and academic teachers in literacy, mathematics and science learn how to support AC teachers and students in course implementation.

Dual Credit and Industry Certification
Courses 3 and 4 in the AC curricula offer the potential for dual credit when a state or district has an established process for approving such courses. Each AC pathway also offers opportunities for industry certification for students who complete the program.

Collaboration and Partnerships
Ongoing relationships among education, business and other stakeholders are central to AC pathway programs. Representatives from industry and postsecondary institutions have helped shape the curriculum design and technical content. Serving as an expert panel, they have collaborated with secondary educators and state education agency staff to identify authentic learning experiences for students that can lead to additional opportunities after high school. Organizations represented in the development of the Automated Materials Joining Technology pathway program of study include:

- American Electrical Power
- American Welding Society
- Columbiana County Career/Technical Center
- Columbus State Community College
- Edison Welding Institute (EWI)
- Keysafety (AWS)
- Lincoln Electric
- Rockwell
- Miami University
- Miami Valley Career Technology Center
- Ohio Department of Education
- The Ohio State University Center on Education and Training for Employment
- Polymer Ohio
- Southern Regional Education Board
- TTP-Rivers Career Center
- WeldTech International

Automated Materials Joining Technology Curriculum

College or Career?...Why Not Both?
Schools are challenged to better prepare students for a wide array of postsecondary and career options. The workforce of today and tomorrow demands a higher level of skill — individuals who grasp complex problems, understand technology and troubleshoot solutions.

Advanced Career (AC) answers these needs. By fusing a rigorous academic core with challenging project work and advanced technology in a career pathway program of study, AC courses give students a greater depth of knowledge and skills, and prepare them for more options after high school.

Advanced Career provides:

- ready-to-implement course work for students
- comprehensive training for teachers
- access to tools and technology for project-based learning
- end-of-course assessments
- opportunity for industry certification and/or dual credit

In this four-course AMJT curriculum, students design, build and test a variety of authentic products needed by business and industry. While applying the engineering design process, they gain a deep understanding of materials science and how materials can improve product performance. Students design products using Solid Edge software and collect data using National Instruments’ LabVIEW software. They use programmable logic controllers (PLCs) to manipulate automation utilized in the assembly process. Students complete the AMJT program may seek a variety of certifications, such as LabVIEW and Siemens PLCs and pneumatic and hydraulic technician certifications through the International Fluid Power Society.

Advanced Materials Joining Technology was developed by SREB and Ohio as part of a multi-state consortium to improve career and technical education in this country. For more information about other Advanced Career curricula, visit sreb.org/ac.