

# Accelerated and Enhanced Career Path Education

Grant Number: MI-35901-21-60-A-51

## Virginia Peninsula Community College

### Final Evaluation Report

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# EXECUTIVE SUMMARY

The Accelerated and Expanded Career Path Education (AECE) project at Virginia Peninsula Community College (VPCC; formerly Thomas Nelson Community College) aims to support individual and regional economic recovery from the COVID-19 pandemic while addressing current and future high-demand workforce needs in the construction trades and in shipbuilding and ship repair (VPCC, 2020).

The VPCC AECE project has four main objectives, each aligned to a core element.



**Increase the number of industry partners** engaged in developing programs that meet workforce needs.



**Establish a Trades Advisory Board and a Trades Facility** in the upper Virginia peninsula that provide students with access to training for high-demand jobs.



**Increase online and hybrid class options for new and enhanced programs** in the construction trades, shipbuilding and ship repair, and related manufacturing occupations.



**Partner with the Hampton Roads Workforce Council** to fill a service gap in the construction trades, shipbuilding and ship repair, and related manufacturing occupations.

VPCC partnered with Magnolia Consulting, a woman-owned small business specializing in research and evaluation, to evaluate the AECE project. The evaluation for the AECE project utilized a mixed-methods design, using both quantitative and qualitative data. Primary data sources included surveys, interviews, focus groups, institutional data, and project documents. This final evaluation report includes findings across the length of the project, with specific focus on summative evaluation questions and evaluation activities not reported on previously in the interim evaluation report.

Below is a summary of key findings related to project outcomes for each of the core elements, corresponding project objectives, and evaluation questions.

INDUSTRY ENGAGEMENT (CORE ELEMENT 2)	
<b>PROJECT OUTCOMES</b> Increased industry partner engagement in developing programs and establishing a Trades Facility that meets workforce demands.	<b>KEY FINDINGS</b> VPCC AECE project leaders leveraged existing relationships with industry to recruit partners to serve on the Trades Advisory Board and provide support. Industry partners provided support in the form of advising, referring their employees to training at the Trades Facility, and connecting students with employment opportunities with their companies.

Increased industry awareness of VPCC programs supporting construction trades, shipbuilding and ship repair, and its related manufacturing occupations.

Project leaders established a marketing campaign that included social media, radio, and TV commercials to promote trades programs. Videos were also created featuring recent graduates and soon-to-be graduates to showcase skills earned to target industry and employer needs. Project leaders hosted four key outreach events ranging in size from 1 to 50 attendees, with a total of 141 attendees across all events.



## PATHWAY PROGRAMS (CORE ELEMENT 3)

### PROJECT OUTCOMES

Increased student access to enrollment in and completion of skill-building and certification programs.

Participants are prepared to enter the workforce in shipbuilding, ship repair, manufacturing, and construction jobs.

Increased student and industry partner satisfaction with the AECE programming in meeting their needs for career readiness.

Businesses are hiring graduates

### KEY FINDINGS

Overall enrollment in AECE-supported courses increased each year, with 84% of enrollees completing their course. Students at the Trades Facility completed credentials in welding, carpentry, and Computer Numerical Control (CNC).

To support their preparation for the workforce, students earned credentials in welding, carpentry, and CNC with a total of 136 certifications earned by Trades Facility students.

Students reported positive perceptions of their course instructors, format, and content on surveys and in focus groups. Students reported few challenges with their course format. Welding students participating in focus groups expressed strong satisfaction and appreciation for the hands-on, in-person opportunity for training in their local areas.

Industry partnerships facilitated internships and employment opportunities for students. Students also gained employment with local industries, such as NASA and its subcontractors like Psionic.



## WORKFORCE DEVELOPMENT (CORE ELEMENT 4)

### PROJECT OUTCOMES

Deepened engagement of Hampton Roads Workforce Council (HRWC) members in identifying job skills and hiring requirements.

### KEY FINDINGS

The AECE project successfully engaged the HRWC during its initial stages, aligning programming with employer needs through advisory board participation and discussions on job skills and hiring requirements. The HRWC also provided annual contributions of \$20,000 to support the VPCC Trades Center. Despite challenges in sustaining the HRWC's engagement, the project developed learning opportunities and credentials that met regional workforce demands.

# INTRODUCTION AND BACKGROUND

Funded by a Strengthening Community Colleges (SCC) grant, the Virginia Peninsula Community College (VPCC; formerly Thomas Nelson Community College) Accelerated and Expanded Career Path Education (AECE) project aimed to support individual and regional economic recovery from the COVID-19 pandemic while addressing current and future high-demand workforce needs in the construction trades and in shipbuilding and ship repair (VPCC, 2020).

## Evaluation Overview, Purpose, and Approach

To determine if the AECE project was on track to achieve its goals and objectives, VPCC partnered with Magnolia Consulting (Magnolia)—a woman-owned small business specializing in research and evaluation. With more than 20 years of proven industry experience, Magnolia has demonstrated expertise in workforce development, education and public outreach, and community college education. In particular, Magnolia’s previous work includes evaluating three U.S. Department of Labor Trade Adjustment Assistance Community College and Career Training workforce development grants at Southwest Virginia Community College, VPCC, and Coconino Community College.

The evaluation of the VPCC AECE project aimed to assess the project’s progress in achieving its objectives, including establishing a Trades Facility, developing industry-aligned training programs, and engaging industry partners. The evaluation followed a mixed-methods design, incorporating both qualitative and quantitative data. Key data sources included surveys, interviews, focus groups, institutional data, and project documents. This final evaluation report focuses on summative evaluation questions aligned with the SCC grant’s core elements, emphasizing outcomes related to industry engagement, student enrollment and completion, and program alignment with workforce needs.

## The SCC Program, Participating Institution, and Key Partners

The SCC program, funded by the U.S. Department of Labor, supports workforce development through initiatives aiming to enhance career pathways and address local labor market demands. The VPCC AECE project was led by staff and faculty at VPCC. The program served students in the upper Virginia Peninsula region, particularly those interested in construction trades, shipbuilding and ship repair, and related manufacturing occupations. Program partners included regional industry leaders, the Hampton Roads Workforce Council (HRWC), and education entities including area high schools.

## Contents of This Report

This final evaluation report is designed to offer insights into the AECE project implementation and evaluation findings. The current section, **Introduction and Background**, provides context for the program and outlines the evaluation’s purpose and scope. The following section, **Methods and Analysis**, details the evaluation approach, including participants, data sources, and evaluation strategies.

The **Program Overview** section describes the institution, roles, implementation timeline, staffing, and management, and addresses challenges and changes to the original proposed project plan. **Summary of Inputs, Activities, and Outputs** reports the project's progress toward key inputs, activities, and outputs from the logic model, each aligned to a core element. The **Findings** section is organized by core element and aligned with project objectives and summative evaluation questions.

The report concludes with **Key Successes, Lessons Learned, and Recommendations**, which highlight successes, challenges, and evidence-based guidance for future efforts. The **Conclusion** and **Limitations** sections summarize the key findings and constraints that may have influenced the evaluation. Supporting materials, such as course lists and example evaluation instruments, are included in the **Appendices** for reference.

# METHODS AND ANALYSIS

## Evaluation Background

Magnolia designed a formative and summative evaluation plan based on the AECE project logic model and aligned to the core elements. Evaluators identified a series of evaluation questions associated with each objective to guide the overarching evaluation and produce relevant and useful findings for key stakeholders. This final evaluation report addresses summative evaluation questions.

## Evaluation Questions

Evaluators developed evaluation questions aligned to the core elements and associated project objectives.



### Core Element 2: Sector Strategies and Employer Engagement

**Objective 1:** Increase the number of industry partners engaged in developing programs that meet workforce needs (SCC grant Core Element 2).

**Objective 2:** Establish a Trades Advisory Board and a Trades Facility in the upper Virginia Peninsula (Core Element 2) that provide students with access to training for high-demand jobs, including in the construction trades, shipbuilding and ship repair, and related manufacturing occupations (Core Element 3).

#### Summative Evaluation Questions:

- To what extent did the AECE project increase engagement, investment, and level of involvement among industry partners to support the development of programs in the region?
- To what extent did the project increase industry awareness of programs that support construction trades, shipbuilding and ship repair, and related manufacturing occupations?



### Core Element 3: Enhanced Pathway Programs and Accelerated Learning Strategies

**Objective 2:** Establish a Trades Advisory Board and a Trades Facility in the upper Virginia Peninsula (Core Element 2) that provide students with access to training for high-demand jobs, including in the construction trades, shipbuilding and ship repair, and related manufacturing occupations (Core Element 3).

#### Summative Evaluation Questions:

- What are the outcomes for machining students as a result of participating in the AECE project?
- To what extent does the AECE project create and deliver programming that satisfies student and industry needs and prepares students for careers in construction trades and shipbuilding/repair-related occupations?



**Objective 3:** Increase online and hybrid class options for new and enhanced programs in the construction trades, shipbuilding and ship repair, and related manufacturing occupations.

**Summative Evaluation Question:**

- To what extent does the AECE project increase student access to, enrollment in, and completion of online, hybrid, and facility-based courses in construction trades, and shipbuilding/repair and related manufacturing occupations?

**Core Element 4: Strategic Alignment with Workforce Development System**

**Objective 4:** Partner with the HRWC to fill a service gap in the construction trades, shipbuilding and ship repair, and related manufacturing occupations.

**Summative Evaluation Question:**

- To what extent does the AECE project represent the job skills and hiring requirements based on employer needs?



To answer the summative evaluation questions aligned to each of the core elements and corresponding project objectives, Magnolia implemented a treatment-group-only, mixed-method evaluation design with a utilization-focused approach. Magnolia identified appropriate measures that are relevant to the expected outputs and outcomes of the AECE project (Appendix A).

## Participants

The evaluation of the VPCC AECE project included a range of invested participants engaged in or impacted by project activities, including students, instructors/faculty, industry partners, and advisory board members.

Participants in the project evaluation included:

- Students enrolled in AECE-supported courses (spring 2021–fall 2024).
  - A total of 118 students responded to end-of-course surveys.
  - Institutional data, including enrollment and completion records, were collected.
- Students participating in programs or coursework at the Trades Facility.
  - A total of 13 welding students, taking courses at the Trades Facility, participated in focus group interviews, conducted as two separate groups.
- Faculty teaching AECE-enhanced courses.
  - Six faculty members teaching AECE-enhanced courses participated in interviews.
- Industry partners and trades advisory board members.
  - Records from advisory board meetings and outreach events were collected. These records reflect the participation of more than 50 industry partners.

## Data Sources

To address the summative evaluation questions and examine progress toward each objective for this final evaluation report, Magnolia evaluators used a variety of data collection methods. These methods included document review, project progress tracking, surveys, interviews, and focus groups. The data sources and corresponding participants are described below. A sample of data collection instruments can be found in Appendix B & C.

Project Team Interviews



Evaluators conducted a focus group with six members of the project team in November 2022. Findings from these interviews were reported in the interim report.

Faculty Interviews



In February and March 2024, evaluators conducted interviews with faculty members who teach AECE-enhanced for-credit courses. The purpose of the interviews was to capture faculty members' feedback on ways their coursework, relationships with industry partners, and students' learning experiences had been impacted by the AECE project. Magnolia evaluators developed the interview protocol in collaboration with the AECE project team, and evaluators conducted the interviews virtually on Zoom.

Industry Partner Interviews



Evaluators conducted interviews with three key industry partners participating on the Trades Advisory Board and three faculty members in February 2023. Findings from these interviews were reported in the interim report.

Trades Facility Student Focus Groups



Evaluators conducted focus groups with two groups of students in the Welding program at the VPCC Trades Facility. Evaluators developed the focus group protocol in collaboration with the AECE project team. The focus groups were conducted virtually on Zoom, during students' class time. A total of 13 students participated, and all participating students completed an informed consent form. During the focus groups, students shared their perspectives on the Trades Facility program overall, course instructors, organization, format, and content of their course. Students also discussed ways the program is supporting their career goals, challenges they have faced, and suggestions for improvement.

AECE Course Student Surveys



VPCC provided evaluators with survey data from students who completed their end-of-course surveys in Trades Facility courses, up to September 2024. The courses in the data set include Carpentry Level 1 and five welding courses (FCAW, GMAW, GTAW, SMAW, and Certified Welder). A total of 118 survey responses were collected. The number of students from each course completing a survey is available in Appendix F. Surveys included VPCC-generated survey questions asking about students' experiences in the course or program as well as additional questions developed by evaluators about the course, the program format, and student satisfaction.

Institutional Data



VPCC shared de-identified and coded institutional data with evaluators regarding the students enrolled in the courses and programs impacted by the grant.

Document Review



Evaluators reviewed documents throughout the project, including the project team meeting minutes, quarterly COR reports, quarterly project work plans, and quarterly reports.

## Data Analysis

Evaluators analyzed both quantitative and qualitative data from the sources listed above to generate findings for this final evaluation report. For quantitative data, including closed-ended survey responses and institutional data, evaluators cleaned the data and calculated descriptive statistics using SPSS and Excel. For qualitative data, such as open-ended survey responses, focus group transcripts, and interview data, evaluators imported the data into Atlas.ti and conducted a thematic analysis. This process employed a combination of deductive and inductive coding methods, as outlined by Clarke et al. (2021).

## Deviations From Planned Data Collection

Data collection for the project faced multiple challenges, described in detail below in the Challenges and Deviations From Planned Activities section. Challenges included privacy policies, communication delays, and low response rates, particularly for initial surveys. VPCC policies restricted data collection from dual enrollment students (who were mostly under age 18) and prohibited the inclusion of end-of-course survey data for courses with fewer than five students. Delays in the informed consent process also limited focus group participation, but a revised opt-in process enabled evaluators to conduct a focus group with Trades Facility students by spring 2024. Additionally, a lack of industry partner involvement in the final two years of the project, coupled with VPCC's decision not to administer surveys to industry members, led evaluators to rely on program documents and team communications for insights into partner engagement.

# PROGRAM OVERVIEW

## AECE Project Purpose and Goals

The VPCC AECE project aims to address current and future high-demand workforce needs in the construction trades, shipbuilding and ship repair, and related manufacturing occupations (e.g., machining, welding) in Virginia (VPCC, 2020). The project focuses on four objectives as they align to the SCC grant core elements (U.S. Department of Labor, 2021):

- Increase the number of industry partners engaged in developing programs that meet workforce needs.
- Establish a Trades Advisory Board and a Trades Facility in the upper Virginia Peninsula that provide students with access to training for high-demand jobs.
- Increase online and hybrid class options for new and enhanced programs in the construction trades, shipbuilding and ship repair, and related manufacturing occupations.
- Partner with the HRWC to fill a service gap in the construction trades, shipbuilding and ship repair, and related manufacturing occupations.

## Rationale for the AECE Project

VPCC identified a need for increased programming and online instructional capacity for shipbuilding, ship repair, and related manufacturing training in the upper Virginia Peninsula. The Virginia Peninsula is unique in its concentration of shipbuilding and ship repair businesses and consequently requires a steady incoming workforce equipped for those industries. VPCC has partnered with the shipbuilding and ship repair industries since its founding in 1968. Owing to changes within the shipbuilding, ship repair, and manufacturing industries, as well as shifts in instructional delivery stemming from the COVID-19 pandemic, VPCC determined a need to expand its program offerings and increase its institutional capacity to deliver online what has traditionally been hands-on, technical programming.

VPCC also identified a secondary regional need for expanded trades training opportunities in the upper Virginia Peninsula. This region is home to approximately 700 jobs for carpenters, masons, roofers, electricians, plumbers, welders, and machinists and was expected to have more than 80 job openings a year in those occupations over the next five years (JobsEQ Q1-2020 Dataset). Consequently, a secondary aim of the AECE project was to create training opportunities to fill these anticipated job openings within various trade occupations.

Project leaders noted shifting demand in the labor market throughout the course of the project. Training programs that initially indicated strong promise for high enrollment did not garner the predicted interest or involvement. At the same time, other programs emerged, such as Facilities Maintenance, that were identified as an industry need and workforce demand. When and where possible, project leaders made adjustments to accommodate a shifting labor market and regional needs and interests.

## Participating Sites

VPCC is an accredited, two-year institution of higher education established as part of a statewide system of community colleges. VPCC primarily serves the residents of the cities of Hampton, Newport News, Poquoson, and Williamsburg and the counties of James City and York.

VPCC provides associate degree programs, both for students wishing to transfer to four-year institutions and for students seeking a career as a technical or paraprofessional worker. VPCC also provides continuing education and community outreach programming.

The project focused on increasing shipbuilding, ship repair, and related manufacturing and construction training opportunities in Virginia, particularly in the upper Virginia Peninsula, rather than for a specific population.

## Project Structure and Program Roles

At VPCC, the project team includes the project manager, Trades Facility coordinator, financial and grant managers, college-level and unit-level administrators, Workforce Development administrators, representatives from the Office of Institutional Research and Effectiveness (IRE), adjunct faculty, and faculty for credit-bearing courses. The full organizational chart and additional descriptions for the project team are presented in Appendix D.

## Key Project Activities

Each key project activity undertaken as part of the VPCC AECE project was aligned to a core element. Activities included developing new programs, enhancing existing courses, supporting students through bridge programs, and fostering industry partnerships.

### *Establishment of Trades Facility and Associated Training Programs*

The VPCC AECE project established a fully operational Trades Facility and launched a range of industry-aligned training programs. The project leaders sought input from industry partners during the establishment of the facility and associated programming. Through VPCC and the Trades Facility, students have access to hands-on learning experiences in the construction trades, aligned to industry needs.

### *Development of New Courses and Course Enhancements*

Through VPCC AECE project activities, new programs and program components were developed and provided at VPCC. Stackable credentials in the CAD pathway, including Architectural Technology, Ship Drafting & Design, Virtual Machining & Design, and Career Studies, were developed, and a Precision Machining Career Studies Certificate (CSC) was established. Carpentry and Masonry programs were introduced for the Construction pathway, and a Facilities Maintenance program was developed in response to identified needs. In addition, course offerings in Electrical Engineering Technology (EET) and HVAC were enhanced with online and hybrid components to improve student career readiness. Welding students overwhelmingly preferred in-person, hands-on learning, and therefore welding courses incorporated limited online or hybrid components.

### *PREP Bridge Program for Trades Students*

As part of the VPCC AECE project, the Peninsula Regional Education Program (PREP) Bridge program was introduced to support students enrolled in courses or programs at the Trades Facility. The program initially experienced low enrollment. In response, project leaders transitioned support services to the Trades Facility three days a week, which made accessing the program services easier for students already attending courses on-site at the facility.

Students who signed up for the PREP Bridge program completed professional skills trainings and certifications, including those offered by the American Welding Society.

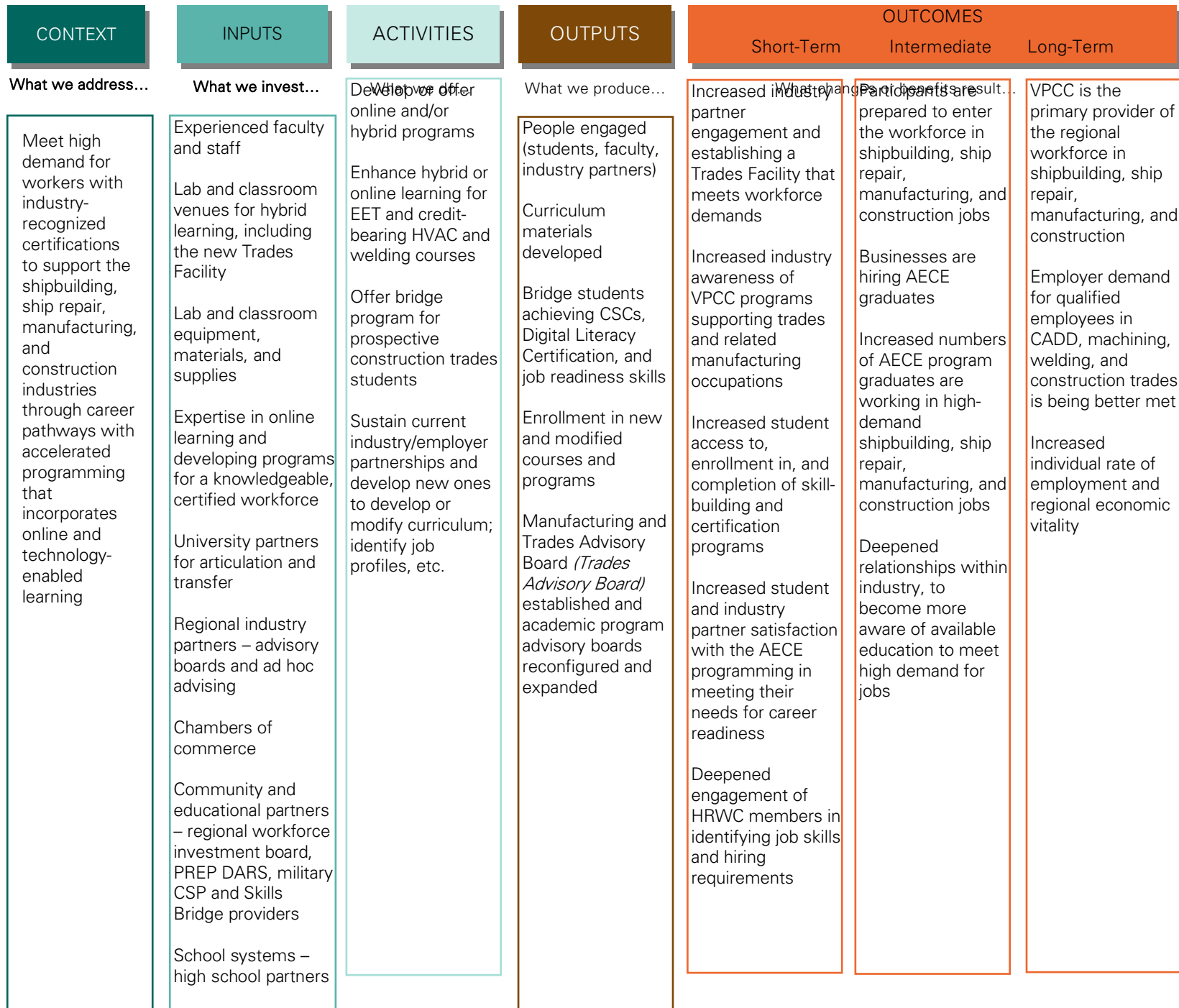
### *Industry Partnerships and Outreach*

The VPCC AECE project leveraged existing industry partnerships and conducted outreach to promote new partnerships. Industry partners were recruited to serve on the Trades Advisory Board, provide advising, and provide financial support. Industry partners were recruited to help connect students with employment opportunities in the region and contribute to course activities, such as participating in discussions and enhancing the practical relevance of the coursework.

### **Project Logic Model**

This section includes a depiction of the project logic model (see Appendix A for the full project logic model) and a summary of the project activities and outputs, organized by the logic model. The evaluation primarily focused on short-term outcomes, which were considered attainable within the project period.

## Logic Model for VPCC AECE Program





## Challenges and Deviations from Planned Activities

The VPCC AECE project experienced challenges that affected its progress toward objectives and its timeline, including challenges related to establishing the Trades Facility and Trades Advisory Board and collecting data. These challenges are summarized below and reiterated in relevant sections of the report.

### *Delay in Establishing the Trades Facility and Trades Advisory Board*

The project team faced challenges that delayed the establishment of the Trades Facility and the use of the facility for courses and training programs. These challenges included securing a leased facility in the upper Virginia Peninsula, delays in vendor approvals and permit procurement, and slowed installation of infrastructure and site renovations. Originally intended to open in August 2022, the Trades Facility did not officially open until January 2023. Delays in the development of the Trades Facility impacted the establishment of the Trades Advisory Board, which was not established until fall 2022. The combination of delays further impacted student enrollment and industry partner engagement, including the ability of project leaders to sustain interest in the Trades Advisory Board.

### *Challenges in Data Collection*

Data collection processes faced several challenges, including privacy-related policies, communication obstacles, and delays, all of which contributed to low response rates for the initial program surveys. Additional issues involved incomplete course lists, specific requirements from IRE, and consistently low response rates. Low response rates were impacted by additional privacy concerns. Some of the students enrolled in AECE-enhanced courses are dual enrollment students, who for the most part were under age 18. It is VPCC policy to not allow data collection with dual enrollment students. Therefore, none of the data in this report include dual enrollment students. VPCC also has policies prohibiting the college from sharing end-of-course survey data when fewer than five students were enrolled in the course. For this reason, all courses with fewer than five students enrolled are not included in data sets or in this report.

State and institution policy also delayed and limited evaluators' ability to conduct focus groups with students. The informed consent process, which required registrar approval, was lengthy and initially resulted in only one student providing consent, and this student ended up not being available for an interview. Members of IRE, the project team, and the evaluation team met to establish a new process that combined students' opt-in process for general communications with a request for consent to share their contact information for project-related data collection. This opt-in form was provided to students when they started an AECE-enhanced course or program. The new process enabled evaluators to conduct a focus group with consenting students from the Trades Facility by spring 2024.

Challenges related to data collected also impacted efforts to gather feedback from industry partners. There was a lack of industry partner involvement in the last two years of the project and a gap in data collection.



VPCC supervisors, concerned about not overextending industry members who were already contributing services to advisory boards on the college credit-earning side, made the decision not to administer the industry partner survey to advisory board members or any other industry members providing advisory, strategic, or other types of support. For this reason, evaluators relied on program document review and communications with the project team to gather data on industry partner engagement in the last two years of the project.

# SUMMARY OF INPUTS, ACTIVITIES, AND OUTPUTS

This section summarizes the activities and outputs from the VPCC AECE project. To generate this summary, Magnolia evaluators reviewed project documents, including quarterly COR reports, quarterly project work plans, and quarterly reports. Evaluators also worked with the VPCC AECE project team to address any questions about the project activities summary and confirm its accuracy.

The project summary is organized by the key inputs, activities, and outputs from the project logic model. Key findings and project outcomes are referenced throughout the evaluation findings in subsequent sections of this report.

## Summary of VPCC AECE Inputs

The VPCC AECE project identified and obtained the key inputs needed to achieve the project goals and objectives. In their process of establishing the Trades Facility and developing programming, project leaders hired new faculty and staff, provided online learning software and training, purchased and installed necessary equipment, gathered materials, prepared curriculum, and secured and renovated the Trades Facility. In addition, project leader secured funds from industry partners.

PROJECT INPUTS	ACCOMPLISHED PROJECT INPUTS
Experienced faculty and staff	Project leaders recruited and hired VPCC staff and faculty, including a Trades Facility coordinator and adjunct faculty for Trades Facility courses. Program advisors and adjunct instructors were hired for CADD, Machining, Welding, and HVAC.
Expertise in online learning and developing programs for a knowledgeable, certified workforce	Project leaders acquired and provided program-specific online learning software resources and technology-enabled learning resources. CADD and Machining instructors received training for Solid Edge software for Ship Drafting and Design Programs and CSC.
Lab and classroom equipment, materials, and supplies	Project leaders acquired and maintained classroom equipment, materials, and supplies needed for Trades Facility coursework and trainings.
Lab and classroom venues for hybrid learning, including the new Trades Facility	Project leaders secured and prepared the Trades Facility for education and training opportunities. The project team completed Trades Facility and lab upgrades and renovations, including a design build-out, finalizing the lease, conducting site visits, and completing OSHA certification.
Regional industry partners	Project leaders leveraged existing relationships with industry partners, such as those serving on department-level advisory boards.

Community and education partners

Project leaders leveraged existing relationships with education partners, including Jamestown High School.

## Summary of VPCC AECE Activities

The VPCC AECE project identified the key project activities needed to achieve the project goals and objectives. The project team reported developing and offering online and/or hybrid programs, including six enhanced (e.g., hybrid) programs related to construction trades and shipbuilding, ship repair, and related manufacturing occupations. The project team also reported offering new programs and training opportunities at the Trades Facility, including bridge programs for Trades Facility students, Welding and Construction programs, and a new Facilities Maintenance program. The team also recruited industry partners, developed marketing campaigns, and conducted outreach events for local industry and prospective employers.

The project encountered challenges related to the engagement and involvement of industry partners in curriculum development and the Trades Advisory Board. As outlined in the Challenges and Deviations from Planned Activities section, a series of project delays strongly contributed to the project leaders' ability to effectively and sustainably engage industry partners in program development activities.

PROJECT INPUTS	ACCOMPLISHED PROJECT INPUTS
Develop or offer online and/or hybrid programs	Project leaders developed and provided education programs and training opportunities at the Trades Center. Trades programs were developed and provided with 50% online or hybrid components, later transitioning to 20% in response to high student interest in in-person programming. CADD and Machining faculty members completed and approved curriculum. The CSC in Precision Machining program was developed. Stackable credentials in the CADD pathway (Architectural Technology, Ship Drafting & Design, Precision Machining, Virtual Machining & Design, and Career Studies) were developed. Carpentry and Masonry programs were created for the Construction pathway. A Facilities Maintenance program was identified as a need and developed at the Trades Facility.
Enhance hybrid or online learning for EET and credit-bearing HVAC and Welding	EET and HVAC course offerings were enhanced to include online/hybrid components. Faculty included online and hybrid course components to improve student experience and career readiness. Welding programs maintained an in-person focus because of the needs of the program content and in response to students' overwhelming preference for hands-on coursework.
Offer bridge program for prospective construction trades students	Project leaders developed PREP Bridge programs to support Trades Facility students. To increase enrollment, the program transitioned support services to the Trades Facility three days a week.

Sustain current industry/employer partnerships and develop new ones to develop or modify curriculum, identify job profiles, etc.	Project leaders recruited industry partners to serve on the Trades Advisory Board, established a marketing campaign, and conducted direct outreach events with industry partners and the community. Project leaders collaborated with industry partners to connect students to employment opportunities and to contribute to course activities, such as course discussions.
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### Summary of VPCC AECE Outputs

The VPCC AECE project identified the key project outputs that indicate progress toward achieving the project goals and objectives. The project team engaged with a variety of industry partners and students participating in credit-bearing programs enhanced by the AECE project, including Air Conditioning and Refrigeration, Architectural Technology, Electrical Engineering Technician, EET, Foundations of EET, Tech Studies/HVAC and Refrigeration, and Welding Technology Basics (a full course list is in Appendix E). The project team and VPCC faculty developed curriculum materials and courses within the CADD and Machining programs. Project leaders developed a bridge program to support Trades Facility students. Overall enrollment in AECE courses increased each year. The Trades Advisory Board was developed, and two meetings were conducted. Department-level (academic) advisory boards were enhanced.

PROJECT INPUTS	ACCOMPLISHED PROJECT INPUTS
People engaged (students, faculty, industry partners)	The AECE project engaged and recruited students in the Virginia Peninsula seeking training in construction trades and hired and developed partners with faculty and regional industry partners.
Curriculum materials developed	The lead CADD and Machining faculty members completed the curriculum approval process, and the new CSC in Precision Machining was offered in August 2022. Two CADD adjunct faculty members finalized course materials for the new CSC in Architectural Technology. The degree programs for both EET AAS and Foundations of EET were revised. The Facilities Maintenance program was developed for the Trades Facility, in response to demand/need.
Bridge students achieving CSCs, Digital Literacy Certificate, and job readiness skills	PREP Bridge students received support in completing certifications, including NS Digital Literacy (17 students), ACT WorkKeys Credential (8 students), Writing Labs (35 students), and Career Readiness Skills Modules and PREP Workshops (22 students).
Enrollment in new and modified courses and programs	Overall enrollment in AECE-supported courses increased each year, with an average 64% annual increase in enrollment. Across all cases of enrollment, 84% of enrollees completed their course. Students at the Trades Facility completed credentials in Welding, Carpentry and CNCs, with a total of 136 certifications earned by Trades Facility students.

Trades Advisory Board established and academic program advisory boards reconfigured and expanded

The Trades Advisory Board was established, and advisory board meetings were conducted. Department-level (academic) advisory boards were expanded. Each trades program has a minimum of two advisors, one from the upper Virginia Peninsula and one from the lower Virginia Peninsula.

## Core Element

# 2

# FINDINGS: SECTOR STRATEGIES AND EMPLOYER ENGAGEMENT



*Objective 1: Increase the number of industry partners engaged in developing programs that meet workforce needs.*

*Objective 2: Establish a Trades Advisory Board and a Trades Facility in the upper Virginia Peninsula (Core Element 2) that provides students with access to training for high-demand jobs, including in the construction trades, shipbuilding and ship repair, and related manufacturing occupations (Core Element 3).*

### *Summative Evaluation Questions:*

- To what extent did the AECE project increase engagement, investment, and level of involvement among industry partners to support the development of programs in the region?
- To what extent did the project increase industry awareness of programs that support construction trades, shipbuilding and ship repair, and related manufacturing occupations?

To address summative evaluation questions related to Core Element 2 and the corresponding project objectives, Magnolia evaluators analyzed project documents, interviewed VPCC faculty, reviewed the project progress tracker, and met with the project team. Through analysis of these data sources, evaluators developed a set of findings in relation to the summative evaluation questions aligned to the project objectives for Core Element 2. This section of the report describes findings that relate to industry partner engagement and awareness and to associated outcomes for Core Element 2.

## Industry Partner Engagement and Involvement

The VPCC AECE project leaders engaged with multiple industry partners to support AECE-enhanced coursework and Trades Facility programming. Industry members were involved in two types of advisory boards at VPCC. Professionals from regional industry served on advisory boards at VPCC at the department level, before the start of the AECE project. These department-level (academic) advisory boards were established to help guide coursework and student learning experiences in a way that aligns with industry needs. Through the AECE project, project leaders launched a second type of advisory board, the Trades Advisory Board. The purpose of this advisory board was to support the development and increase the relevance and workforce compatibility of programs at the newly established Trades Facility. Industry members from the department-level advisory boards were recruited to participate in the Trades Advisory Board.

### *Project leaders leveraged existing networks to recruit Trades Advisory Board members*

Project leaders built on prior relationships with relevant organizations and VPCC department-level advisory board members to recruit industry partners for the Trades Advisory Board. Project leaders contacted and recruited representatives from shipbuilding, ship repair, construction, and manufacturing trades, as well as representatives from the regional public school system and Hampton Roads Workforce Council. Following the initial recruitment, the Trades Advisory Board met twice between the start of the project and April 2023.

Evaluators collaborated with the project team to administer a survey and conduct interviews with Trades Advisory Board members, during the development phase of the advisory board. These formative surveys and interviews, shared in the May 2023 interim evaluation report, aimed to support project leaders in developing and growing the advisory board. However, the advisory board did not meet between the release of the interim evaluation report and this final evaluation report. Evaluators developed a follow-up survey to gather insights from advisory board members on their experiences and suggestions for improvement. However, VPCC project leaders chose not to administer the survey, citing concerns about overburdening industry partners, who already had multiple commitments, including obligations to long-standing department-level advisory boards.

The leveraging of existing networks was both an asset and a challenge in developing the Trades Advisory Board. While project leaders successfully recruited relevant industry professionals with ties to VPCC through existing advisory boards and contacts, these individuals often had limited time and capacity to serve on multiple boards. Concern about overcommitment was a key reason for the suspension of advisory board activities in spring 2023, including related evaluation activities.

### *Members of industry advised faculty and supported program growth*

Despite challenges in developing and sustaining the Trades Advisory Board, the AECE project successfully developed and enhanced industry partnerships that fostered program advisement. During interviews, instructors of AECE-supported courses and programs reported that collaborations with industry and department-level advisory board members resulted in course revisions to better align course content with industry needs. One notable partnership with Dominion Energy led to the addition of an alternative energy component to programming. The EET program also benefited from engagement with industry partners such as Jefferson Lab, Sigma-Netics, Dominion Energy, and Psionic. These partners provided guidance on curriculum development and identified specific skills needed for workforce readiness.

The HVAC program also demonstrated increased industry engagement by expanding its advisory board to five members. Horns Heating and Cooling offered internships that provided students with hands-on field experience, while HVAC partners such as A/C Masters and Rogers Mechanical supported program graduates by hiring students into full-time positions.

### *Industry members across multiple sectors participated in advisory activities*

Advisory board members for the Trades Facility and department-level advisory boards represented multiple sectors, including institutions of higher education, workforce councils, and industry leaders in manufacturing, trade, HVAC, and EET. Table 1 outlines the meeting names, attendance numbers, and the participating organizations.

Table 1. Number and List of Meeting Participants by Meeting

Meeting Name	# of Attendees	Meeting Participants
HVAC Advisory Board Meeting	4	New Horizons Regional Education Center, College of William and Mary, Dran's Heating and A/C, and Horns Heating and Cooling
VPCC Manufacturing & Trade Advisory Board Meeting	10	Newport News Shipbuilding, Bay Electric Company, Hampton Roads Workforce Council, Virginia Ship Repair Association, Hampton Roads Alliance, Virginia Economic Development Partnership, Colonial Williamsburg, City of Williamsburg, Greystone Inc., and Henderson Inc.
VPCC Manufacturing & Trade Advisory Board Meeting	7	Newport News Shipbuilding, Bay Electric Company, Hampton Roads Workforce Council, Virginia Ship Repair Association, Hampton Roads Alliance, and Fjord Construction
VPCC Manufacturing & Trade Advisory Board Meeting	8	Newport News Shipbuilding, Bay Electric Company, Hampton Roads Workforce Council, Virginia Ship Repair Association, Hampton Roads Alliance, David Nice Builders Inc., City of James County, and Fairlead Integrated
Advisory Board Meeting – Electrical Engineering Technology	10	NASA Langley Research Center, Newport News Shipbuilding, Engineering Technology Old Dominion University, Sigma-Netics, Dominion Power, Printpack Rigid Plastics Division, and Psionic

### *Industry involvement increased student educational and employment opportunities*

In addition to increasing advisement opportunities, industry involvement during the AECE project increased student educational and employment opportunities. During interviews, faculty described ways the AECE project supported partnerships and increased students' opportunities for internship experience and employment and to further their education. Faculty reported that through partnerships with industry partners, all students completing the Virtual Machining and Design program moved on to either positions at the shipyard or a four-year university. Faculty also reported that students in their programs secured paid positions through connections with industry partners and that the specialized equipment purchased with AECE project funds provided students with the training they need to become employed in local industry. Faculty also discussed developing relationships with Old Dominion University to ease the transition for interested students to a four-year university, as well as developing an industry partnership with an architectural company in Williamsburg. Additionally, EET advisory board members actively supported students by participating in classroom discussions, offering resume advice, helping students build essential skills and confidence, and sharing job postings.



## Increased Awareness

The VPCC AECE project increased awareness about the Trades Facility and associated programming through partnerships and outreach. Industry partners invited to participate on advisory boards or related activities gained familiarity with the Trades Facility and the goals of the AECE project. The project leaders also engaged in active outreach with the community to raise awareness about the Trades Facility and associated programming.

### *Outreach events increased regional awareness of the Trades Facility*

Project partners conducted active outreach to raise awareness about the Trades Facility and its associated programs. They implemented a multichannel marketing campaign using social media, radio, and high school outreach, with a focus on recruiting students from underrepresented groups. Videos were produced featuring recent and soon-to-be graduates demonstrating skills aligned with targeted industry and employer needs. Project leaders also hosted four outreach events, which ranged in size from 1 to 50 attendees, with a total of 141 participants across all events (Table 2).

Table 2. Number and List of Participants in Outreach Events

Outreach Event Name	# of Attendees	Participants at the Event
VPCC Trades Center Ribbon Cutting Ceremony	40	Williamsburg/James City County Public Schools, Williamsburg Chamber of Commerce, Newport News Shipbuilding, Hamptons Roads Workforce Council, Virginia Ship Repair Association, Hampton Roads Alliance, Virginia Economic Development Partnership, Colonial Williamsburg, City of Williamsburg, Greystone Inc., Henderson Inc., Williamsburg Economic Development, and York County Economic Development
Williamsburg-James City County (WJCC) Public Schools Manufacturing Day – Jamestown High School	50	WJCC Public Schools – Jamestown High School (staff and students), James City County Economic Development, Greystone Inc., and Newport News Shipbuilding
WJCC Public Schools Manufacturing Day – Lafayette High School	50	WJCC Public Schools – Lafayette High School (staff and students), James City County Economic Development, Greystone Inc., and Newport News Shipbuilding
VPCC Trades Center Tour and Info Session – Colonial Williamsburg Foundation	1	Colonial Williamsburg Foundation

### *The Trades Facility location enhanced regional interest*

The project leaders' direct outreach, along with recruitment and partnerships with advisory board members, helped increase awareness of the Trades Facility's programming. The strategic location of the Trades Facility also generated significant community and regional interest in the AECE project.

Surrounded by rural areas, the Trades Facility offers residents education and training opportunities that would otherwise require costly and time-consuming travel. This strategic placement alone attracted attention from potential students, partners, and the community. For example, the Chamber of Commerce hosted an education committee meeting at the Trades Facility, evidence of increased regional awareness of the facility.

## Summary of Findings and Outcomes for Core Element 2

VPCC AECE project activities supported two primary outcomes for Core Element 2 related to industry partner engagement and awareness. Overall, AECE project activities increased industry partner engagement in Trades Facility programs and other AECE-enhanced coursework. The primary strategies and activities that promoted the increase were engagement in advisory boards, both the department-level advisory boards and the Trades Advisory Board. Project leaders also developed and implemented targeted outreach to industry partners and the community at large to increase awareness and engagement.

### Key Findings for Core Element 2 Outcomes

#### Project outcome: Increased industry partner engagement in developing programs and establishing a Trades Facility that meets workforce demands



VPCC AECE project leaders leveraged existing relationships with industry to recruit partners to support program development and serve on the Trades Advisory Board. Industry partners provided support in the form of advising, referring their employees to training at the Trades Facility, and connecting students with employment opportunities with their companies. Project leaders faced challenges in sustaining engagement as a result of industry partners' multiple commitments, including department-level advisory boards at VPCC.

#### Project outcome: Increased industry awareness of VPCC programs supporting construction trades, shipbuilding and ship repair, and related manufacturing occupations



Project leaders established a marketing campaign that included social media, radio, and TV commercials to promote trades programs. Videos were also created featuring recent graduates and soon-to-be graduates to showcase skills earned to target industry and employer needs. Project leaders hosted four key outreach events ranging in size from 1 to 50 attendees, with a total of 141 attendees across all events.

# FINDINGS: PATHWAYS PROGRAMS AND ACCELERATED LEARNING



**Objective 2:** Establish a Trades Advisory Board and a Trades Facility in the upper Virginia Peninsula that provides students with access to training for high-demand jobs, including in the construction trades, shipbuilding and ship repair, and related manufacturing occupations.

**Objective 3:** Increase online and hybrid class options for new and enhanced programs in the construction trades, shipbuilding and ship repair, and related manufacturing occupations.

### Summative Evaluation Questions:

- What are the outcomes for students as a result of participating in the AECE project?
- To what extent does the AECE project create and deliver programming that satisfies student and industry needs and prepares students for careers in construction trades and shipbuilding/repair-related occupations?
- To what extent does the AECE project increase student access to, enrollment in, and completion of online, hybrid, and facility-based courses in construction trades, shipbuilding and ship repair, and related manufacturing occupations?

To address summative evaluation questions related to Core Element 3 and the corresponding project objectives, Magnolia evaluators analyzed project documents and institutional data, conducted two focus groups with students taking coursework at the Trades Facility, and participated in meetings with the project team. Evaluators also analyzed composite survey data from AECE-supported coursework. Through analysis of these data sources, evaluators developed a set of findings in relation to summative evaluation questions aligned to project objectives for Core Element 3. This section of the report focuses on findings related to the development and delivery of trades programming that satisfies student and industry needs, and the associated outcomes for Core Element 3.

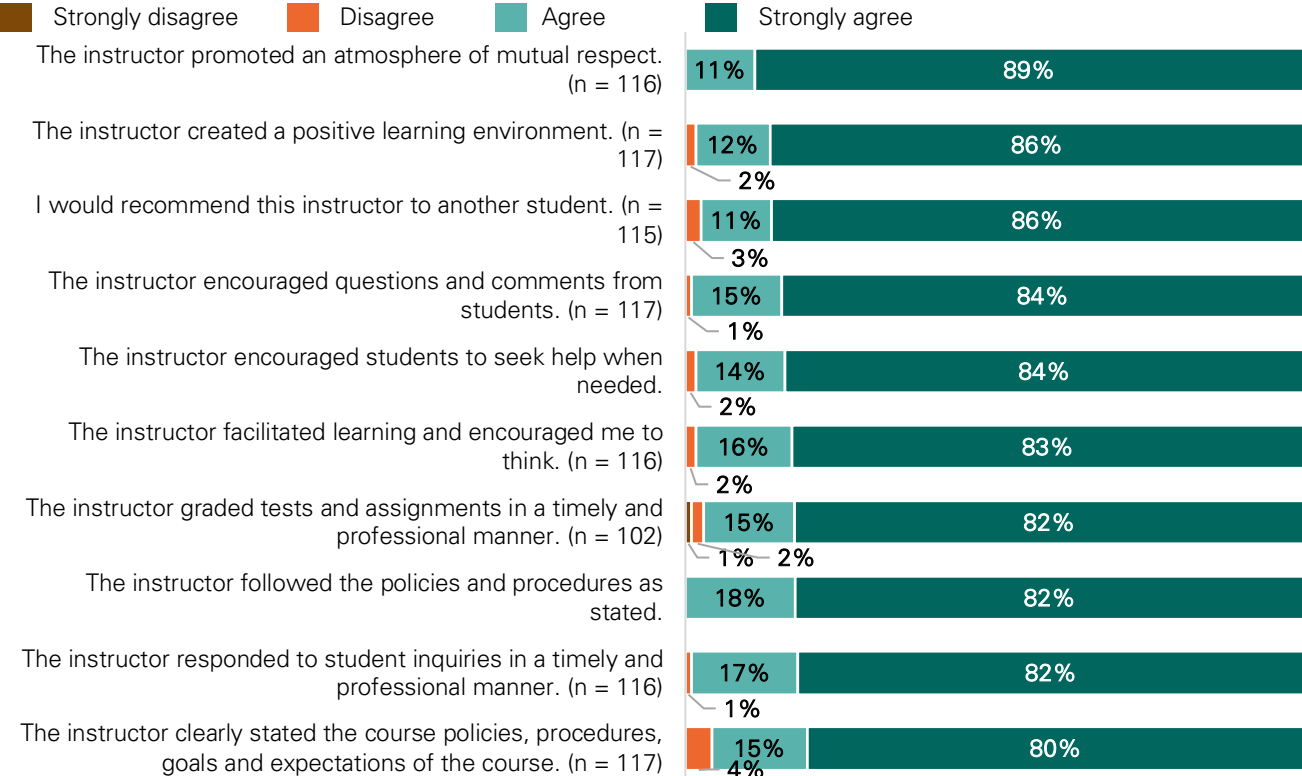
## Student Experiences in Trades Facility Programming

On the surveys and during the focus groups, students in the Trades Facility program reported positive perceptions of the course instructor, format, and materials and overall satisfactory experiences with the Trades Facility programming. The findings below detail students' reported perceptions and experiences.

*The majority of Trades Facility students reported positive perceptions of their course instructor*

On surveys, students at the Trades Facility rated their instructor and the organization of course content (Error! Reference source not found.). All students *agreed* (11%) or *strongly agreed* (89%) the instructor promoted an atmosphere of mutual respect, and all students *agreed* (18%) or *strongly agreed* (82%) the instructor followed the policies and procedures as stated. A majority of students *agreed* or *strongly agreed* with all other statements regarding their perceptions of their course instructor, with few students *disagreeing* with these statements.

Figure 1. Trades Facility Students’ Perceptions of Their Course Instructor (n = 118 except where noted)



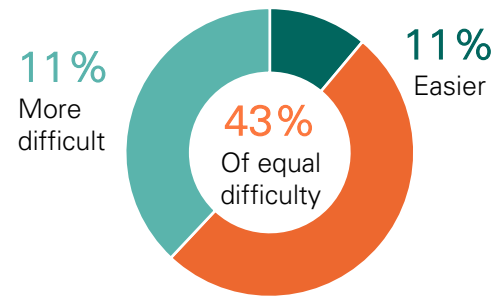
Note. Scale: 1 = Strongly disagree, 2 = Disagree, 3 = Agree, 4 = Strongly agree. Percentages may not sum to 100 because of rounding.

During focus groups, Welding students expressed similar positive perceptions of their course instructor. Students shared appreciation for their instructor and the overall atmosphere of the class. One group of students described their instructor as a “wealth of knowledge and experience” who thoroughly explained the welds, how they work, and what could go wrong, as well as offered advice. One student commented, “He’s the best instructor I’ve ever had for anything ever before.”

***Fewer than half of Trades Facility students indicated their course was of equal difficulty compared to other college courses***

On surveys, Trades Facility students rated the level of difficulty of the subject matter for their course in comparison with other college courses they had taken (Figure 2). Less than half of students indicated their course was *of equal difficulty* (43%). Some students (11%) indicated their course was *more difficult* (11%) and some students (11%) indicated their course was *easier* (11%) than other college courses they had taken.

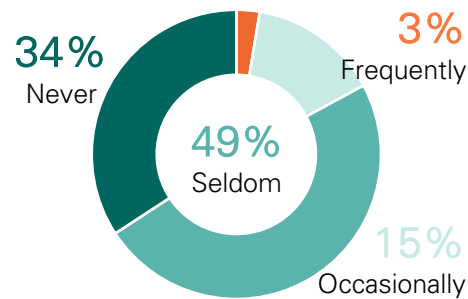
Figure 2. Trades Facility Students' Perceptions of Subject Matter Difficulty (n = 108)



***About half of Trades Facility students indicated they were seldom absent from class***

On surveys, Trades Facility students indicated how frequently they were absent from class (Figure 3). About half of students indicated they were *seldom* absent (49%). Fewer than half indicated they were *never* absent (34%), and some indicated they were *occasionally* absent (15%) or *frequently* absent (3%).

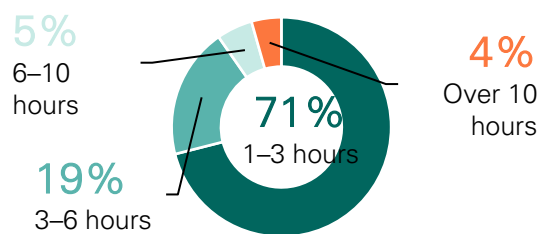
Figure 3. Trades Students' Frequency of Absence (n = 117)



***The majority of Trades Facility students spent 1–3 hours outside of class on their course***

On surveys, Trades Facility students indicated the number of hours they spent outside of class each week on their course (Figure 4). The majority of students (71%) reported spending 1–3 hours outside of class on their course per week. Fewer than a quarter of students (19%) reported spending 3–6 hours outside of class on their course. Some students (5%) reported spending 6–10 hours, and some (4%) reported spending more than 10 hours.

Figure 4. Number of Hours per Week Trades Students Spent on Their Course Outside of Class (n = 114)



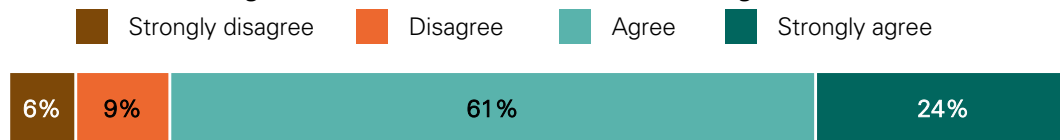
During focus groups, Welding students shared their interest in getting more time in the booth, at the lab and to practice their welds. Students described their interests in learning specific types of welds, having opportunities to work through welds that are personally challenging, and gaining overall welding experience.

One student framed their interest in having more time for practice in terms of their desire to “know 100% when we take that test we are going to pass.” Some students, who described themselves as having previous course or professional experience, stated the timing was workable for their learning level. These students also supported the recommendation of 1–2 more weeks for students to practice their welding skills. In their discussion, students acknowledged that spending time practicing welds does not end at the point of certification and is a required part of “being a good welder.”

### *The majority of Trades Facility students found the course materials to be valuable*

On surveys, Trades Facility students rated the value of course materials (Figure 5). The majority of students (61%) *agreed* or *strongly agreed* (24%) the textbook and/or supplemental course materials were a valuable resource for their course. However, seven students (9%) *disagreed* with this statement, and five (6%) *strongly disagreed* with this statement.

Figure 5. Students’ Level of Agreement on the Course Materials Being Valuable ( $n = 79$ )

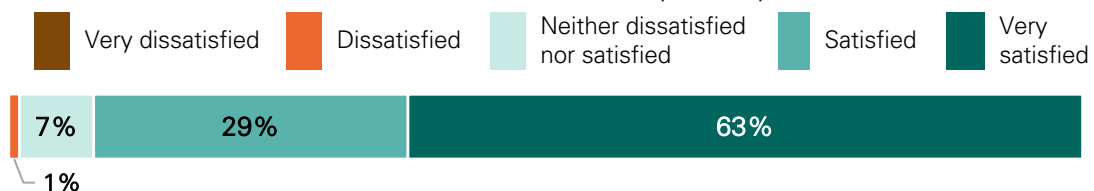


Note. Scale: 1 = *Strongly disagree*, 2 = *Disagree*, 3 = *Agree*, 4 = *Strongly agree*.

### *The majority of Trades Facility students highly rated their satisfaction with the course*

On surveys, Trades Facility students rated their overall satisfaction with the course format (Figure 6). The majority of students rated their overall satisfaction with the course format as *satisfied* (29%) or *very satisfied* (63%). Some students (7%) reported they were *neither dissatisfied nor satisfied* with the course, and one student (1%) indicated they were *dissatisfied* with the course.

Figure 6. Students’ Overall Satisfaction with Their Course ( $n = 116$ )



Note. Scale: 1 = *Very dissatisfied*, 2 = *Dissatisfied*, 3 = *Neither dissatisfied nor satisfied*, 4 = *Satisfied*, 5 = *Very satisfied*.

During focus groups, Welding students expressed interest in having more real-world opportunities in the Welding program. For example, they recommended students have the option to bring in projects from their work or home, weld with different materials, and work on projects that represent different scenarios they might encounter in a welding career. While acknowledging that metal is expensive, students expressed an interest in working with metals that are common in the field, such as copper, aluminum, and stainless steel. Students described working primarily with mild steel throughout their coursework.

One student suggested providing simulation activities that mimic real-world industry scenarios in order to “see how it would feel if you were in a workplace.”

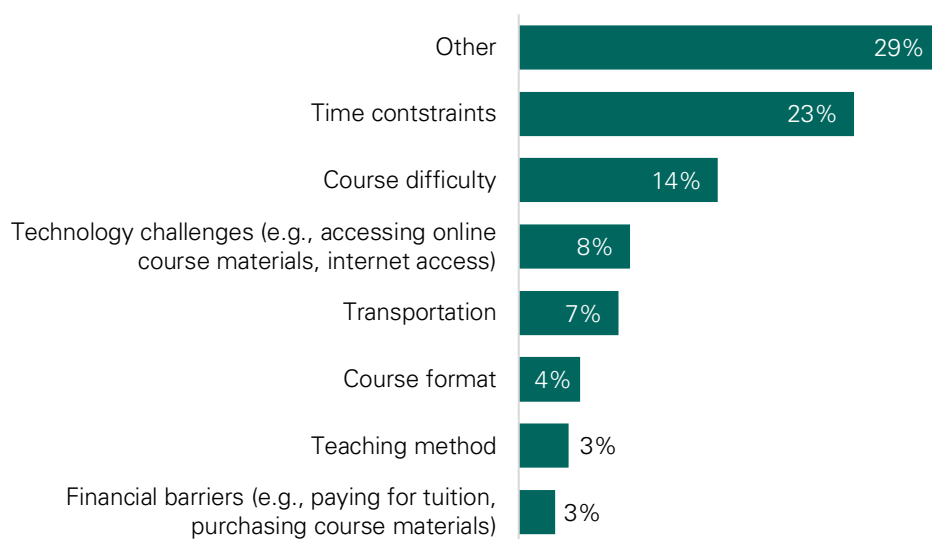
Students discussed examples such as simulating a weld between two furnaces and having to use a mirror to complete a weld because the weld is out of the line of site. Students also suggested allowing students to bring in projects of their own to work on as part of their practice time.

“Let students bring in their own stuff because that’s really where you get that knowledge from. You are going to take a little bit more pride in it and pay a little bit more attention to what you are doing.”  
—Student focus group comment

### *Few Trades Facility students reported challenges during coursework*

On the survey, students selected challenges they encountered while working on their courses (Figure 7). Fewer than a quarter of students indicated they had challenges with time constraints (23%). Nearly a third indicated “other” challenges (29%).

Figure 7. Types of Challenges Students Encountered While Working in Their Courses ( $n = 118$ )



During focus groups, Welding students described overall good organization for their courses. Students reported the workload and requirements for completing their course as “manageable” and “not bad at all.” Some students described the course as “a little rushed” and suggested an extra two weeks could give learners more time to practice and improve on their welds in general and in advance of certification tests. Some students shared experiences of schedule changes, canceled classes, and lack of instructor coverage. One student described an experience of learning that class was canceled only after rushing to complete work at a job and traveling on-site for class. Another student described having to wait two months to receive tests results while waiting to start a job. Students suggested maintaining consistency in the instructors and schedule, as different instructors have different preferences. They described these types of changes as being disruptive and “switch[ing] up the flow too much.”

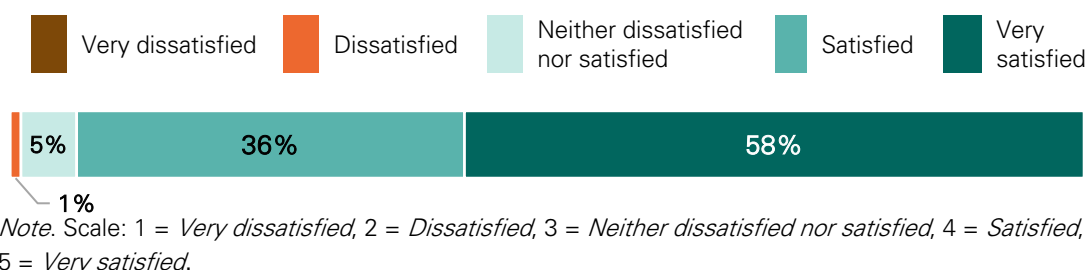


Some students suggested having more than one instructor available in the evening so that one instructor was not covering two sections and to minimize schedule changes, such as last-minute canceled classes.

### *The majority of Trades Facility students reported positive perceptions of the course format*

On surveys, Trades Facility students rated their overall satisfaction with the in-person course format (Figure 2). The majority of students rated their overall satisfaction with the course format as *satisfied* (36%) or *very satisfied* (58%).

Figure 2. Students' Overall Satisfaction With the Course Format ( $n = 116$ )



On surveys, Trades Facility students also rated their level of agreement with various statements related to the format of the course (Figure 9). The majority of students indicated the course format supported their learning style (21% *agreed*, 75% *strongly agreed*), the course format provided them with sufficient interaction with their instructor (21% *agreed*, 74% *strongly agreed*), and the course format provided them with sufficient interaction with fellow students (24% *agreed*, 68% *strongly agreed*). The majority of students also indicated the course format fit their schedules (23% *agreed*, 62% *strongly agreed*).

During focus groups, Welding students described their strong appreciation for having access to a trades program in their region and the opportunity for in-person, hands-on learning opportunities. Students were grateful not to have to travel to more-distant locations to complete a welding program.

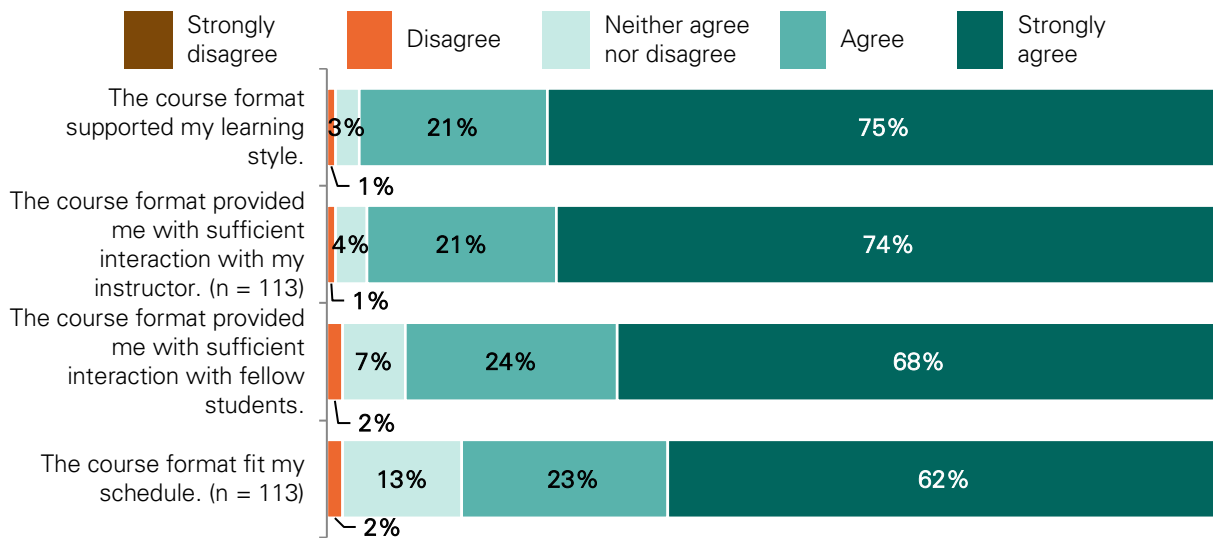
One student shared their perception that the program's proximity was particularly helpful for "young people" who are just beginning their career. Students overwhelmingly described welding as generally unsuitable for an online environment, with few opportunities to include online/hybrid components. As one student noted, "You have to be in the classroom. It's a very hands-on experience."

"We are kind of in the great northwest uncharted territory. I absolutely flipped out when I heard it [the Trades Facility program] was here."

—Student focus group comment



Figure 9. Students' Ratings Regarding Course Format (*n* = 114 except where noted)



Note. Scale: 1 = Strongly disagree, 2 = Disagree, 3 = Neither disagree nor agree, 4 = Agree, 5 = Strongly agree. Percentages may not sum to 100% because of rounding.

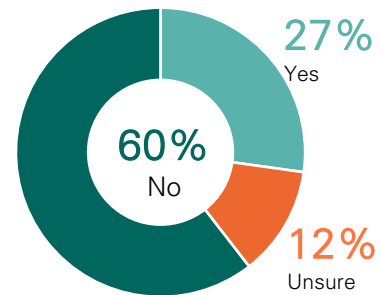
**More than half of Trades Facility students did not have challenges with the in-person course format**

On surveys, Trades Facility students indicated whether the course format presented any challenges (Figure 10). More than half of students (60%) indicated they had no challenges. Fewer than half indicated they had challenges (27%) or were unsure (12%).

During focus groups, Welding students expressed strong appreciation for the in-person format and offered some suggestions for improving the course format. Some students suggested scheduling the career-focused meetings in the afternoon or hosting meetings with employers online to eliminate the need to travel back and forth to the Trades Facility.

Students described the employer job fairs as valuable, with one student wishing that “they were offered earlier.” Students shared that the timing and need for travel for these meetings increased their travel costs and decreased their opportunities to practice welding.

Figure 10. Students' Perceptions of Whether the Course Format Presented Challenges (*n* = 114)



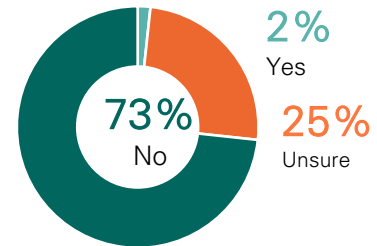
“Don’t necessarily stop the employer meetings, because we should have them. Have a Zoom call or something so we don’t have to drive all the way there and we can still have time to weld.”

—Student focus group comment

*The majority of Trades Facility students indicated they would not learn better if the course were offered in a different format*

On surveys, when Trades Facility students were asked if they thought they would have learned better if the course were offered in a different format (i.e., online or hybrid), the majority of students (73%) indicated they would not, a quarter of students (25%) indicated they were unsure, and two students (2%) indicated they would have learned better if the course were in a different format (Figure 11). The two students who indicated they would have learned better in a different course format indicated they would prefer a hybrid format.

Figure 11. Students' Perceptions of Whether They Would Learn Better If the Course Were in a Different Format ( $n = 116$ )



### Student and Faculty Perceptions of Online/Hybrid Components

During interviews, faculty members described different ways they had incorporated online or hybrid opportunities into their coursework to support student learning experiences. Faculty shared that hybrid opportunities had helped students maximize their learning time during in-person learning sessions because they were showing up with a basic understanding of the content and questions. Faculty also described online programming as a way to serve both dual enrollment and traditional students simultaneously. During interviews, faculty shared the following ways they had included online/hybrid components in their coursework to enhance students learning experience:

- Provided online lectures through prerecorded video and PowerPoint.
  - Provided students with materials to review online in advance of their next class so they had a basic knowledge of the equipment before they worked hands-on with the equipment on campus.
  - Paired videos and PowerPoints for online access with the work that students would complete on campus, allowing for a direct connection between the lecture and applied portions of the course.
- Used a hybrid format to allow for the same amount of seat hours but with a hybrid format of three hours of lecture and three hours of lab.
  - Encouraged students to take on the responsibility for their learning by putting the onus of the learning on students to do their work at home in advance of in-person class sessions.
  - Supported students in developing their questions in advance of class time, by engaging with materials and learning the limits of their understanding in advance of in-person meetings.
- Identified course components that need to be in-person, such as lab work, and those that lend themselves well to online learning, such as CAD and machining theory.
  - Used the online option as a means to serve both dual enrollment and traditional students simultaneously.

*Note.* Each color bar indicates responses from an individual faculty member.

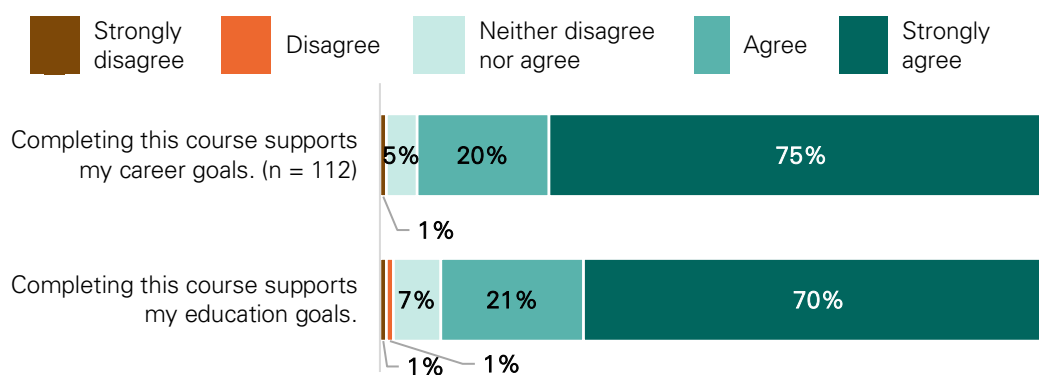
## Student Perceptions of Career Preparedness

On surveys and in focus groups, students shared their perceptions of how well the trades courses prepared them for their careers.

*The majority of Trades Facility students indicated the course supported their career goals*

On surveys, Trades Facility students rated their level of agreement with various statements about the course supporting their goals (Figure 12). The majority of students agreed the course supported their career goals (20% *agree*, 75% *strongly agree*). The majority of students also agreed the course supported their education goals (21% *agree*, 70% *strongly agree*).

Figure 12. Students' Ratings of the Course Supporting Their Goals (*n* = 113 except where noted)



*Note.* Scale: 1 = *Strongly disagree*, 2 = *Disagree*, 3 = *Neither disagree nor agree*, 4 = *Agree*, 5 = *Strongly agree*. Percentages may not sum to 100% because of rounding.

During focus groups, Welding students overwhelmingly agreed the course was giving them the skills and knowledge they needed to pursue their career. One student shared that the course was helping prepare them with the fundamentals of welding and that other learning specific to their employer and industry sector would come on the job. Some students shared that the welding certifications were a key piece of their career progression. Students also shared their perception that employers were interested in paying a high salary for the skills they were acquiring through the program.

“Here [at the Trades Facility] is the basics of everything we need, and it is perfect, exactly how it is. We can use what we learn here as base knowledge when we get out in the field.”  
—Student focus group

## Faculty Perceptions of the Impact of AECE Course Improvements on Student Career Preparedness

During interviews, faculty shared examples of how the AECE project and associated funds have impacted students. Faculty shared observations of increased engagement, retention, and career placement among students. They also shared anecdotes of students returning to VPCC to express appreciation for the training and preparation they received and to report their progress in their careers.

Some students who completed AECE courses have returned to work as adjunct faculty and advisory board members. Faculty described the following ways they perceived the student experience had improved as a result of the AECE project:

- Students showed up to work with the equipment with higher level of readiness and understanding.
- Students appeared more engaged in the course, and fewer students had dropped out since the introduction of more equipment and hands-on coursework.
- Students were moving through the program to get a CSC.
- Students were demonstrating an ability to broadly apply what they learned in the course, describing problem-solving at home using their learning from the courses.
- Students were gaining employment, and students already employed were moving up the salary scale in their company.

- Students were serving on advisory boards.
- Students had developed lasting friendships as a result of their time interacting in the applied (equipment-focused) portion of the course.
- Students appeared more confident in their learning and their ability to use “proper terminology” and exhibit professionalism, each of which would help them demonstrate they were proficient in their trade and help their overall career advancement.
- Students who at first seemed intimidated by working with equipment grew to show confidence and proficiency in working with the equipment of the trade.

- Students were seeing what an EET career looked like and were envisioning a career and not just a job, thanks in part to the support of industry partners who came to class.
- Students were returning to VPCC to share how the program had set them up career success.
- Students reported finding positions working on nuclear submarines and aircraft carriers.
  - One student, who had completed the program, was handpicked to go on a sea trial testing ships at sea. This student came back and thanked the instructor for the opportunity in coursework to troubleshoot and problem-solve.
- Students who had been working full time in industry were returning to VPCC to work as adjuncts, which in turn expands VPCC programs.
- Students had been hired by NASA, and two of these students were serving on a current advisory board.

- Twenty students had been able to complete the NC3 Dremel 3D printer certification.
- Students had expressed enjoying the 3D printing component of the program and the opportunity to have a prototype before building in the machine shop.
- Students were finding career and university placements.

*Note.* Each color bar indicates responses from an individual faculty member.

## AECE-Supported Course Enrollment and Completion

VPCC’s IRE provided Magnolia evaluators with data on the characteristics of students who enrolled, completed, and dropped out of the AECE program courses between spring 2021 and fall 2024. Data were provided at the course level. Thus, enrollment data for each semester/year represents the number of students who enrolled in at least one AECE-supported course in that semester/year. The following enrollment and completion data represent “enrollment cases.” An enrollment case represents a single instance of course enrollment during a specific semester and year. Each case corresponds to one course enrollment, meaning that a single student may contribute multiple enrollment cases if they enroll in more than one course during the same semester. The total number of enrollment cases for a semester reflects the sum of all course enrollments, not the unique count of individual students enrolled. Enrollment case data are presented below. A list of AECE courses is provided in Appendix F.

### *Overall enrollment in AECE-supported courses increased each year*

Evaluators used institutional data provided by IRE to determine if, and to what extent, enrollment in AECE-supported courses increased from the start of the project until the writing of this report (fall 2024). Overall enrollment in AECE-supported courses increased each year, with a 64% average yearly increase (Table 3).

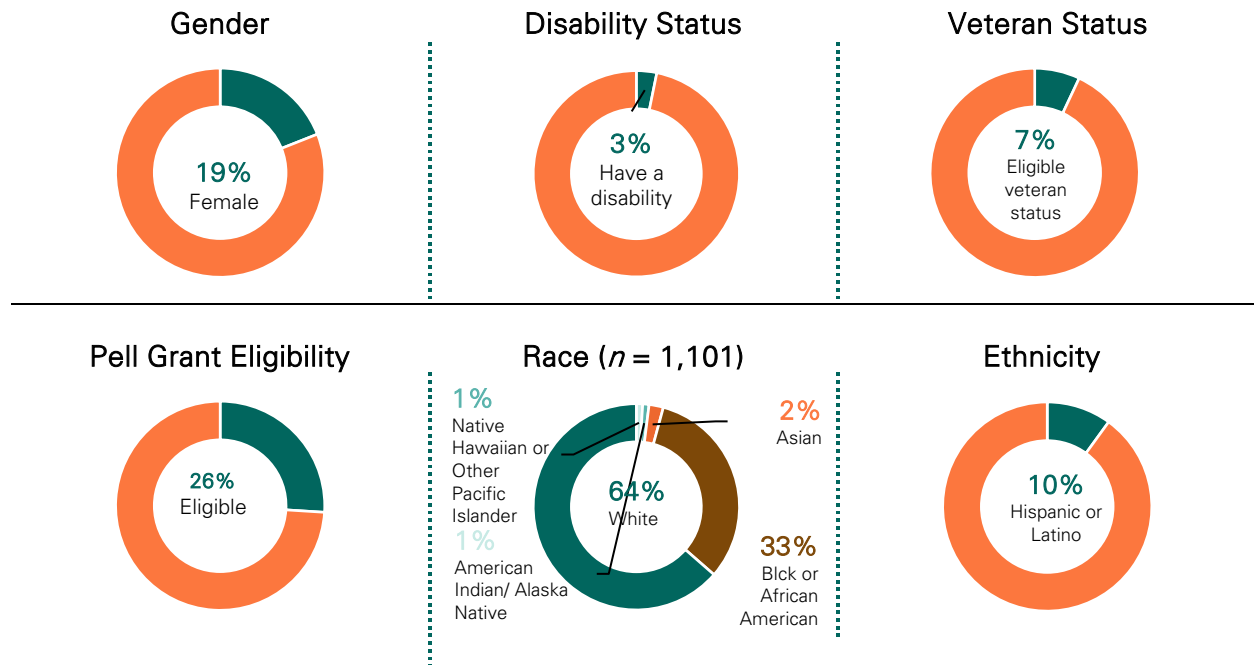
Table 3. Overall Enrollment in AECE-Supported Courses by Semester and Year

Semester	2021	2022	2023	2024
Fall	137	238	221	289
Spring		93	177	194
Summer		5	29	36
TOTAL	137	336	427	519

### *Demographic characteristics varied among students who enrolled in courses*

IRE provided institutional data for the individuals who were enrolled in AECE-enhanced courses (Figure 13). Nearly a fifth of students who enrolled in courses identified as female (19%). Three percent of enrolled students reported having a disability, 7% were of eligible veteran status, and 26% were eligible for Pell Grants. Many students who enrolled in these courses identified as White (64%), a third identified as Black or African American (33%), 2% identified as Asian, 1% identified as Native Hawaiian or other Pacific Islander, and 1% identified as American Indian or Alaska Native. Ten percent of students who enrolled in these courses identified as Hispanic or Latino.

Figure 3. Demographics of Students Who Enrolled in AECE-Enhanced Courses ( $n = 1,419$  except where noted)

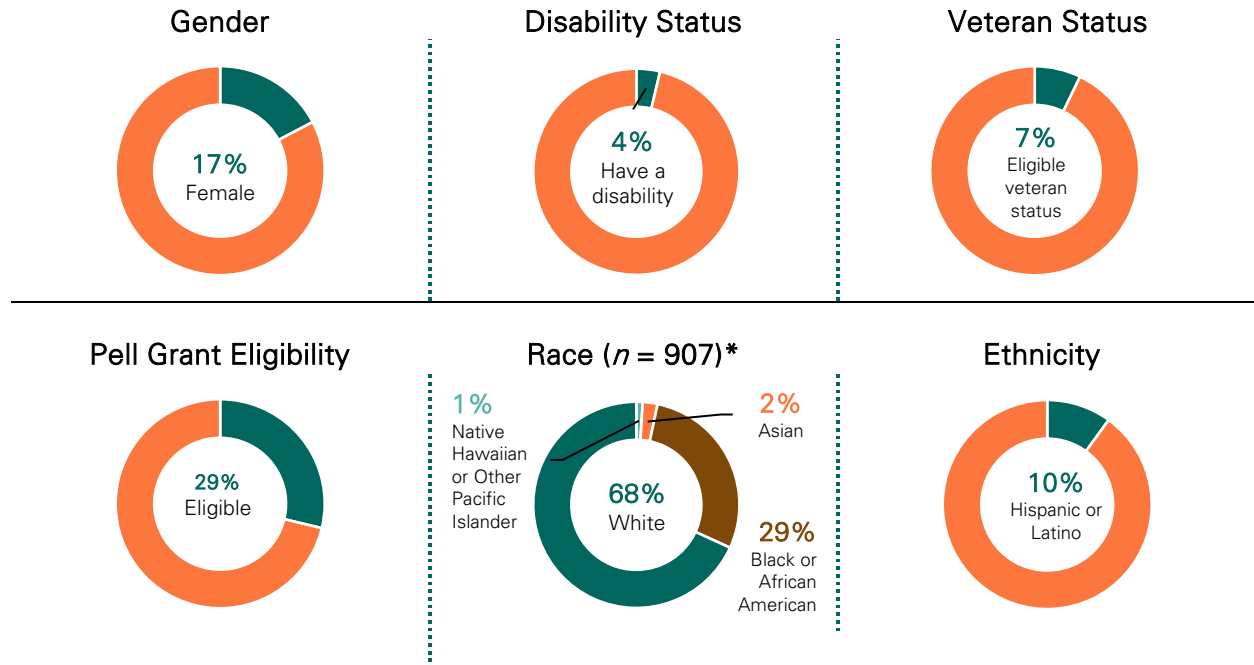


*Note.* Data were provided at the course level; 1,419 does not reflect the unique number of students (students may have taken multiple courses). Percentages may not sum to 100 because of rounding. Race data were not available for 318 students. Race and age data were not complete. Pell, veteran, or disability data for Trades Facility non-credit enrollees were not available. Any course with fewer than five enrollees were redacted to protect confidentiality.

### *Course completion rates varied by demographics*

IRE provided institutional data for the individuals who completed AECE-enhanced courses (Figure 14). Of the students who completed the courses, nearly a fifth identified as female (17%). Of the students who completed these courses, 4% reported a disability, 7% were of eligible veteran status, and 29% were eligible for Pell Grants. Students who completed these courses identified as White (68%), as Black or African American (29%), as Asian (2%), or as Native Hawaiian or other Pacific Islander (1%). Ten percent of students who completed these courses identified as Hispanic or Latino.

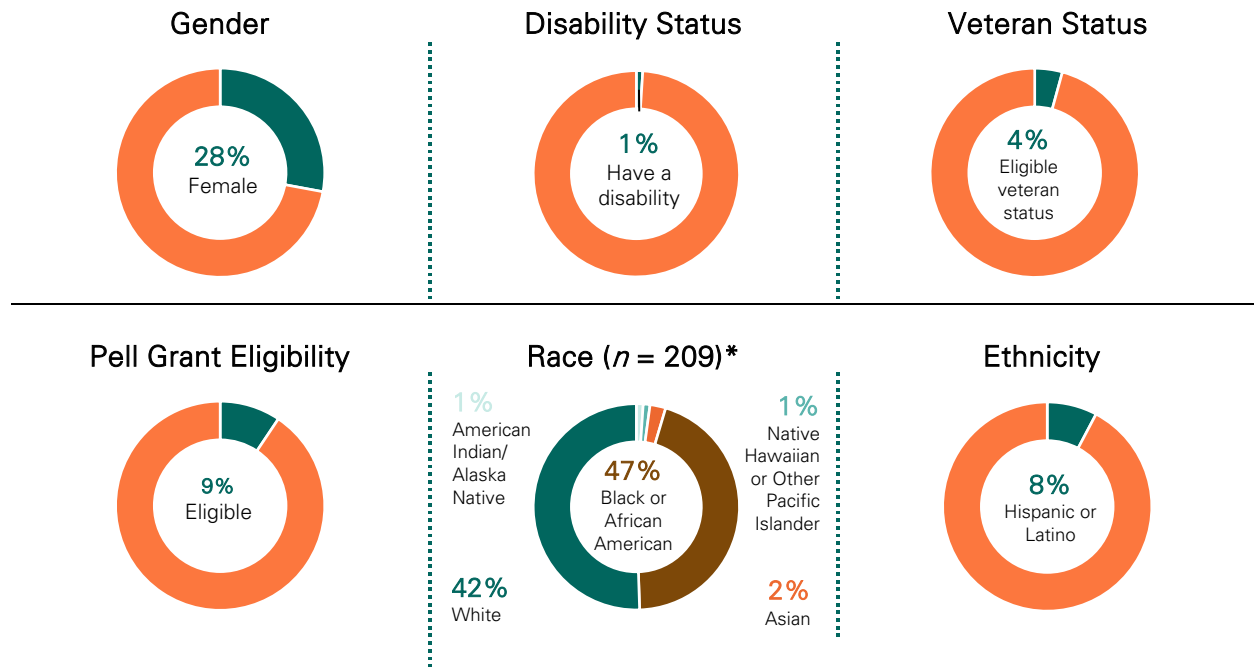
Figure 14. Demographics of Students Who Completed AECE-Enhanced Courses ( $n = 1,186$  except where noted)



*Note.* Data were provided at the course level; 1,186 does not reflect the unique number of students (students may have taken multiple courses). \*Race data were not available for 279 students.

IRE provided institutional data for the individuals who dropped AECE-enhanced courses (Figure 15). The average dropout rate across all courses was 16%. The demographics of students who dropped courses appeared to slightly differ from the demographics of students who completed the courses. Roughly half of students who dropped a course were Black or African American (47%) and 42% were White, indicating a higher dropout rate relative to enrollment proportion among Black or African American students when compared with White students. Female students also had a higher dropout rate relative to enrollment proportion when compared with male students, with 28% of students identifying as female not completing their courses. Other demographic characteristics of students who dropped courses, such as veteran and disability status, were similar to the characteristics of those who completed courses, although a slightly lower percentage of students who were eligible for Pell Grants dropped their courses.

Figure 15. Demographics of Students Who Dropped AECE-Enhanced Programs ( $n = 233$  except where noted)



*Note.* Data were provided at the course level; 233 does not reflect the unique number of students (students may have taken multiple courses). Percentages may not sum to 100 due to rounding. \*Race data were not available for 24 students.

## Credentials Earned by Trades Facility Students

In addition to completing coursework, Trades Facility students had the opportunity to complete professional certifications in their field. Overall, 136 Trades Facility students completed certifications in their field. Students in the Welding program had the opportunity to complete up to five certifications from the American Welding Society (AWS), including Certified Welder, SMAW, FCAW, MIG, and TIG welding. Students also completed certifications from the National Center for Construction Education and Research (NCCER) and the National Institute of Metalworking Skills (NIMS; Table 4).

Table 4. Credentials Earned by Trades Facility Students

Type of Credential	Number of Students Certified
AWS (SMAW)	39
AWS (Flux)	28
AWS (MIG)	18
AWS (TIG)	22
AWS (Certified Welder)	20
NCCER (CCL1 – Carpentry)	8
NIMS (CMOP – CNC)	1
<b>TOTAL</b>	<b>136</b>



## Peninsula Regional Education Program (PREP)

AECE project leaders developed the PREP Bridge program for students to receive additional educational services to support their progress through their programs and provide them with essential skills across disciplines and program types. Services provided by the PREP Bridge program include resume development, computer skills development, communication and networking, interviewing, and time management. Initial enrollment in the PREP Bridge program was low. To increase enrollment and increase access to PREP Bridge services, the project leaders transitioned a PREP representative to the Trades Facility three days a week to offer services to students.

- Of the 51 Welding students who registered for PREP Bridge services:
  - 32 completed the program/Trades Facility courses.
  - 15 are currently working on completing PREP Bridge services/Trades Facility courses.
  - 4 have not returned to school to complete PREP Bridge services/Trades Facility courses (these individuals either needed to withdraw for personal/financial reasons or only intended on completing certain welding courses by preference).

## PREP Bridge Students' Certifications, Awards, and Services

Through the PREP Bridge program, students were supported in completing certificates and credentials. Students in the program completed certifications in welding, digital literacy, WorkKeys, and Facilities Maintenance (Table 5).

Table 5. Certifications, Credential, and Awards Received by PREP Bridge Students

Name/Type of Credential or Certification	Number of Students Awarded
American Welding Society Certifications (SMAW, FCAW, GMAW, GTAW, Certified Welder)	22 (completed all 5)
ACT WorkKeys Credential	8
NS Digital Literacy Credentials	17
Facilities Maintenance Certificate	3
PAID VA Ready Scholarship Award	15

PREP Bridge students also received support in resume writing, career planning, and networking, with one student who attended a Networking Career Industry Event also receiving and accepting a job in Facilities Maintenance (Table 6).

Table 6. Workshop and Support Services Provided to PREP Bridge Students

Type of Service or Support	Number of Students Participating
Virginia Talent and Opportunity Partnership Canvas Course (including Career Readiness Skill Modules)	22
Writing Labs (including career planning, SMART goals, and resumes)	35
Networking and Career Resources Platform	36
Networking Career Industry Event	15 (including 1 student hire)

## Summary of Findings and Outcomes for Core Element 3

VPCC AECE project activities supported two primary outcomes for Core Element 3 related to enrollment and satisfaction in AECE courses and programming. Overall, AECE project activities increased student access and enrollment in trades programs, including credentialing programs offered at the Trades Facility. Students described strongly positive experiences with AECE-supported coursework on surveys and in focus groups, and they reported course offerings met their career interests and needs. Because of a lack of evaluation data from industry partners in the final two years of the project (see the Program Overview section), evaluators were unable to measure industry partner perceptions and satisfaction.

### Outcomes for Core Element 3

#### Increased student access to enrollment in and completion of skill-building and certification programs



Overall enrollment in AECE-supported courses increased each year. Across all cases of enrollment, 84% of enrollees completed their courses. There was some variation in demographics among students who enrolled but did not complete courses. Black students and students identifying as female had higher dropout rates in proportion to the dropout rates of White and students identifying as male, respectively. Students at the Trades Facility completed credentials in welding, carpentry, and CNC, with a total of 136 certifications earned by Trades Facility students, including students enrolled in the PREP Bridge program.

#### Participants are prepared to enter the workforce in shipbuilding, ship repair, manufacturing, and construction jobs



Students attained credentials that prepare them to enter the workforce in manufacturing and construction trades. Students at the Trades Facility completed credentials in welding, carpentry, and CNC, with a total of 136 certifications earned. Specific certifications included AWS certifications in welding and NCCER certifications in carpentry.

#### Increased student and industry partner satisfaction with the AECE programming in meeting their needs for career readiness



Students reported positive perceptions of their course instructors, format, and content on surveys and focus groups. Students reported few challenges with their course format. Welding students who participated in focus groups expressed strong satisfaction and appreciation for the hands-on, in-person opportunity for training in their local areas. Almost all students (95%) indicated the courses supported their career goals, and 92% of students who participated in trades courses were satisfied with their courses. Faculty reported multiple ways AECE funds and activities have improved their courses' ability to prepare students for careers in industry.

## Businesses are hiring graduates



Industry partnerships facilitated internships and employment opportunities for students. For instance, connections with advisory board members helped students secure paid positions, as well as partnerships with companies like Dominion Energy and Jefferson Lab. Faculty described that students who completed the Virtual Machining and Design program secured positions at shipyards. Students also gained employment with local industries, such as NASA and its subcontractors like Psionic.

# FINDINGS: STRATEGIC ALIGNMENT AND WORKFORCE DEVELOPMENT



*Objective 3: Partner with the Hampton Roads Workforce Council (HRWC) to fill a service gap in the construction trades, shipbuilding and ship repair, and related manufacturing occupations.*

### *Summative Evaluation Question:*

- To what extent does the AECE project represent the job skills and hiring requirements based on employer needs?

To address the summative evaluation question related to Core Element 4 and the corresponding project objectives, Magnolia evaluators analyzed project documents, reviewed the project progress tracker, and met with the project team. Through analysis of these data sources, evaluators developed a set of findings in relation to the summative evaluation question aligned to the project objectives for Core Element 4. This section of the report describes findings that relate to program alignment with industry needs and to associated outcomes for Core Element 4.

## Partnership With Hampton Roads Workforce Council

The HRWC engaged with the AECE project by way of providing financial contributions and participating in meetings and events. The HRWC provided an annual financial contribution of \$20,000 to support the VPCC Trades Facility. HRWC members also attended the Trades Center Ribbon Cutting Ceremony and three Trades Advisory Board meetings.

Project leaders acknowledged challenges in engaging industry partners, including the HRWC, in the AECE project activities. The Trades Advisory Board gained initial interest from industry advisors. However, because of delays in the project start and subsequent delays in the establishment of the Trades Facility and related program development, there was discontinuity in timing of peak interest of the HRWC and industry members and opportunities for these interested members to contribute meaningfully. Without actionable steps for advisory board members, it was difficult to sustain their interest and engagement. The project leaders were able to generate memoranda of understanding (MOUs) for internships, and some progress was made with advisory board members in relation to the Welding program. On the college credit-bearing side, department-level advisory boards experienced more success in collaborating with advisors to inform program development and help students secure employment.

## Course Improvements and Alignment to Meet Industry Needs

Three VPCC faculty members who teach credit-bearing courses participated in individual interviews. Below is a summary of the findings from these interviews. Findings are color-coded by individual.

### *AECE-supported courses represent industry needs*

During the interviews, faculty highlighted ways that AECE project funds were used to purchase real-world commercial and industrial equipment, enabling students to gain experience with tools and systems directly used in the industry. Faculty shared that project funds and related program activities enabled them to offer new industry certifications they previously had not been able to provide. Certifications such as an EPA certification and career studies certificates in Virtual Machining and Design were included in direct response to identified industry needs and hiring requirements of regional employers. Faculty also shared that the ability to purchase real-world equipment used in industry enhanced the authenticity and applicability of their coursework for students on a career path into industry. Faculty shared the following ways that project funds supported their coursework:

- Provided students experience with real-world commercial and industrial equipment.
- Provided opportunity for students to earn special certifications (such as EPA certification).

- Purchased equipment to support specialized needs for system courses.
- Provided students with the opportunity to troubleshoot systems by working with real motors and systems instead of educational kits (which are often overly prescribed and do not allow for students to problem-solve and think at a systems level).
- Provided simulation software to help students prepare for hands-on work while at home.
- Combined simulation software and real motors and systems to support students in moving past the “plug and play” level of high school and to think and problem-solve at a systems level.
- Helped faculty explore virtual learning options as they increase their awareness of the needs and backgrounds of a new generation of learners.

- Developed a new career studies certificate in Virtual Machining and Design.
- Purchased tools and materials, such as metals, that are necessary for coursework.
- Purchased equipment, such as 3D printers, that are more aligned to industry needs.
- Expanded industry certification opportunities linked to purchased equipment (NC3 Dremel 3D printer certification).
- Purchased consumables, such as plastic filament, that are needed for coursework and that they could not purchase with other funding streams (access to these consumables has helped to grow the program).
- Expanded the CAD program offerings, including a new CAD 226 course that was developed as a result of the AECE project.
- Provided more opportunities for students in prototyping, which has led to students' increased understanding of the value of prototyping as part of the machining process.

### *AECE project activities and funds enhanced industry partnerships*

During the interviews, faculty described ways the AECE project had supported partnerships and increased students' opportunities for internship experience and employment and to further their education. Faculty reported that through partnerships with industry, all students completing Virtual Machining and Design had taken positions at the shipyard or moved on to a four-year university. Faculty reported that students in their programs had secured paid positions through connections with advisory board members and that the specialized equipment purchased with AECE project funds had given students the training they need to become employed in local industry. Faculty also discussed developing relationships with Old Dominion University to ease the transition for interested students to a four-year university, as well as developing an industry partnership with an architectural company in Williamsburg. During interviews, faculty shared the following ways the AECE project had enhanced their industry partnerships and improved students access to industry-related opportunities:

- Experiences with real-world equipment from industry helped students better articulate their learning during job interviews.
  - Connections with advisory board members helped students secure paid positions.
  - Experiences with the overall program helped students develop an entrepreneurial vision for themselves, their family, and their future family.
- Partnerships with industry, such as Dominion Energy, led to the addition of an alternative energy component to coursework.
  - Partnerships with industry led to course revisions to better align course content to industry needs.
  - Opportunities for students to practice with equipment used in local industry helped prepare them for potential work with NASA and its local subcontractors such as Psionic.
  - Opportunities for students to interact with representatives from industry during class time helped them understand the reasoning behind specific course content and how that content directly applies to work in the industry.
- Partnerships with NASA, Jefferson Lab, and an architectural company in Williamsburg increased student exposure to local opportunities.
  - Opportunities provided by the Virtual Machining and Design program led to student employment at the shipyard and to furthering their education at a four-year university.

### **Summary of Findings and Outcomes for Core Element 4**

Overall, VPCC AECE project activities enhanced the industry and career relevance for students in Trades Facility programs and other AECE-enhanced coursework. Industry partners contributed financially and in an advisory capacity to support alignment of AECE program offerings with industry and employer needs. Faculty shared ways they used AECE funds to enhance the industry-relevance of their coursework and improve students' overall learning experience. Project leaders experienced some challenges in sustaining Trades Advisory Board participation and commitment.

## Outcomes for Core Element 4

### Deepened engagement of Hampton Roads Workforce Council (HRWC) members in identifying job skills and hiring requirements.



AECE project staff successfully engaged with the HRWC during the initial development stages of the project, despite challenges in sustaining that engagement over time. The engagement of the HRWC and other regional partners helped align the AECE programming with employer needs. The HRWC contributed to advisory boards and participated in discussions on job skills and hiring requirements. The HRWC also made annual monetary contributions of \$20,000 to support the VPCC Trades Facility.



Despite challenges in sustaining engagement of the HRWC, the AECE project developed learning opportunities and credentials that align to regional workforce needs. Partnerships with employers, including Dominion Energy and NASA, informed curriculum design and connected students to internships and job opportunities, ensuring that students gained skills directly applicable to regional job requirements.

# SUCCESSSES, LESSONS LEARNED, AND RECOMMENDATIONS

## Key Project Successes

The VPCC AECE project successfully addressed workforce needs through project activities aligned to the core elements and achieved key project successes. Project leaders successfully established the Trades Facility and provided students with hands-on training using industry-standard equipment. Industry partnerships informed curriculum development and connected students with regional employers. Enrollment in AECE-supported courses increased.

### *Successful establishment of the Trades Facility and hands-on training*

The Trades Facility was established with fully operational labs and industry-standard equipment. Students benefited from hands-on training aligned with employer requirements, such as working with real-world industry equipment, 3D printers, and other industry-specific tools. The Trades Facility directly addressed regional workforce demands, providing students with practical experience that mirrors industry environments.

### *Industry engagement and collaboration*

The project engaged more than 50 industry partners through advisory boards and other collaborations. Industry partnerships led to curriculum improvements, internships, and jobs for students. Industry partners, including Dominion Energy, Jefferson Lab, and NASA, contributed to curriculum design and job placement opportunities. Industry partnerships helped align curriculum with real-world workforce needs and provided pathways to employment, supporting the goal of increasing industry engagement and program relevance.

### *Increased student enrollment, certification completion, and career readiness*

Enrollment in AECE-supported courses increased each year, with an 84% completion rate. Students earned a total of 136 certifications, including AWS welding certifications and NCCER carpentry certifications, directly preparing them for industry needs. Through the AECE project, VPCC increased access to high-demand skills and certifications and improved career pathways into the shipbuilding and construction trades.

## Lessons Learned and Recommendations

Magnolia evaluators reviewed evaluation data and preliminary findings with project leads and facilitated a discussion of project lessons learned and recommendations. The following lessons and recommendations were co-generated through this discussion. These insights are intended to guide similar projects by highlighting potential challenges, considerations for project development, and possible strategies to overcome challenges.



### *Consider the long-term impacts of delays and prioritize planning accordingly*

The project partners faced numerous challenges related to program development and student enrollment stemming from a delayed project start. The late project start impacted the acquisition of essential machinery and supplies, such as those needed for CNC machining. It took significant time to make the machining programs operational, and additional issues, such as electrical problems with CNC equipment and compliance requirements, further compounded the delays. In addition to equipment delays, the project leaders had difficulty finding qualified instructors, further hindering progress. The combination of a late project start and delays in acquiring equipment, securing instructors, and developing curriculum and supplies created a cascade of challenges which impacted initial student enrollment and industry partner engagement.

Ensuring that equipment, curriculum, and instructors are in place before program launch could mitigate cascading disruptions. For example, if equipment and facilities are required before recruiting instructors, developing curriculum, seeking advisory input, and ultimately recruiting students, these dependencies should be addressed first. While some tasks can progress simultaneously, others require specific prerequisites to be completed. Project leaders suggest organizing project development timelines with a clear understanding of which activities can overlap and which depend on prior steps.

### *Industry partners need concrete and actionable opportunities to contribute*

Project leaders generated strong initial interest in AECE project goals but faced challenges in sustaining interest and engagement over the length of the project. In the initial years of the project, industry partners attended Trades Advisory Board meetings but had few opportunities to share actionable feedback because of the early stages of facility and program development. Advisory boards on the credit side of programming benefited from preexisting relationships and established structures built around long-standing programs. Because of the developmental nature of the Trades Facility and programs, the Trades Advisory Board was challenged to generate actionable outcomes beyond the creation of MOUs for internships. Project leaders suggest delaying recruitment and engagement of advisory board members until there are meaningful and actionable items for them to address.

### *Monitor labor market needs and adopt flexible programming strategies*

Project leaders described an evolving misalignment between program offerings and the region's labor market needs. The economic landscape of the Virginia Peninsula shifted significantly during the delay to begin project activities. Both the delay in the project start and the shifting economic landscape were magnified by the COVID-19 pandemic. Regular reassessments of labor data are necessary to identify and respond to economic shifts, ensuring program offerings remain relevant and in demand by both industry and prospective students. For example, the Masonry program, initially identified as a regional industry need, proved to be less suitable for the region by the time the Trades Facility was operational and programming was set to begin. By the time the Trades Facility and project activities were underway, Facilities Maintenance emerged as an in-demand program, aligning more closely with industry and prospective student needs in the region.

To mitigate these challenges, project leaders recommend digging deep into labor market statistics and regional needs to identify and track the most appropriate programs for a region. Program providers may also consider adopting flexible programming strategies capable of adapting to evolving labor market conditions to ensure long-term relevance and success.

# CONCLUSIONS AND LIMITATIONS

## Conclusion

The VPCC AECE project demonstrated significant progress in addressing workforce needs in the Virginia Peninsula region through enhanced career pathways and strategic industry partnerships. The program's activities, outputs, and findings highlighted both successes and challenges, offering valuable insights for similar initiatives.

### *Successful Implementation of Key Program Components*

The project leaders successfully implemented key activities, including establishing the Trades Facility, recruiting industry partners, and developing hybrid and in-person programs tailored to industry needs. Enhanced online and hybrid course components, particularly for the CADD and Machining programs, were developed where relevant. For programs such as Welding, the nature of the coursework and students' overwhelming preference necessitated in-person formats, and the AECE project leaders were able to respond to support that need. Enrollment in AECE-supported courses increased each year of the project.

### *Industry Engagement and Outreach Efforts*

The project leveraged existing relationships with industry partners to establish the Trades Advisory Board and encourage industry partner support. Marketing campaigns, including social media, radio, and TV promotions, alongside events like the Trades Facility Ribbon Cutting Ceremony, increased regional awareness of the programs. Despite initial enthusiasm, sustaining industry engagement over the project's duration proved challenging, particularly because of delays in facility readiness and actionable opportunities for advisory board members.

### *Student Satisfaction and Career Readiness*

Survey and focus group findings revealed high levels of satisfaction among students regarding course content, instructors, and program structure. Students appreciated the hands-on learning opportunities and career preparation. Faculty who used AECE funds to purchase equipment and make improvements to their courses noted increased student engagement and retention.

### *Challenges in Project Implementation and Data Collection*

The evaluation highlighted several challenges, including delays in project implementation, equipment acquisition, and data collection. These delays affected the establishment of the Trades Facility, hiring of instructors, and early advisory board activities, leading to missed opportunities for sustained engagement with industry partners. Data collection was further limited by privacy concerns, low survey response rates, and gaps in industry partner participation, reducing the robustness of the evaluation findings.

## *Overall Impact and Future Considerations*

The AECE project represents a significant effort in addressing workforce needs in the Virginia Peninsula region. Project leaders leveraged industry partnerships and expanded educational and technical training opportunities. While challenges existed, the lessons learned offer a pathway to enhance program effectiveness and ensure long-term success for similar initiatives designed to meet regional and industry demands.

## **Limitations**

The VPCC AECE project evaluation is limited in several ways, including the lack of an experimental or quasi-experimental design, the scope of the evaluation activities when compared with the complexity and depth of the project activities, and delays and limitations in data collection.

### *Absence of an experimental or quasi-experimental design*

The evaluation design, which lacks experimental design features such as control and comparison groups, has limitations in the terms of being able to determine impact or conclusively attribute project outcomes to the project itself. It is difficult to determine whether observed changes are directly caused by the project or influenced by external factors. This limitation restricts the study's ability to provide causal evidence of the project's impact, as any improvements or outcomes may also be attributed to other initiatives or unmeasured variables occurring simultaneously.

### *Limited scope of examinations compared with project complexity*

It is not feasible for the evaluation to examine all aspects of this large-scale project in depth. Given the complexity and breadth of activities involved in the initiative, the evaluation focused on components most aligned with the core elements, project objectives, project short-term outcomes, evaluation questions, and components with available data sources or access to data sources. Some important aspects or nuances of the project may not be fully captured or understood. Consequently, the results may not provide a complete picture of the project's strengths, challenges, areas for improvement, and attainment of intermediate and long-term outcomes.

### *Limitations in data collection*

The evaluation was further constrained by delays in project implementation and issues with obtaining data, which reduced the availability and diversity of data and perspectives included in the report. Delays in rolling out the project reduced the evaluation data collection period, potentially leaving insufficient time to observe intermediate and long-term outcomes. Challenges in data collection, related to privacy restriction and limited access to industry partners, also restricted the scope of the evaluation. These factors collectively reduced the robustness of the findings.

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# APPENDIX A: PROJECT LOGIC MODEL

Situation – Challenge	Inputs – Resources (what we currently have, and what we need to address the challenge)	Activities – What the project will provide (what will be done with the inputs to meet objectives)	Outputs – Product (results to be achieved)	Outcomes – Impact		
				Short-Term	Intermediate	Long-Term
<ul style="list-style-type: none"> <li>Meet high demand for workers with industry-recognized certifications to support the ship building, ship repair, manufacturing, and construction industries through career pathways with accelerated programming that incorporates online and technology-enabled learning.</li> </ul>	<p><b>What we have:</b></p> <ul style="list-style-type: none"> <li>Experienced faculty and staff</li> <li>Online learning expertise</li> <li>Lab and classroom venues for hybrid learning, hands-on training</li> <li>Lab and classroom equipment, materials, and supplies</li> <li>Expertise/Knowledge for developing programs for a knowledgeable, certified workforce.</li> <li>University partners for articulation &amp; transfer</li> <li>Regional industry partners – advisory boards and ad hoc advising</li> <li>Chambers of commerce</li> <li>Community and educational partners – Workforce Investment Board, PREP DARS, Military CSP &amp; Skillbridge providers</li> <li>School systems – high school partners</li> </ul> <p><b>What we need:</b></p> <ul style="list-style-type: none"> <li>Hiring new faculty and staff to support new program development and enhanced programming development and growth</li> <li>Program-specific online learning software resources and technology-enabled learning resources</li> <li>Additional, lab and classroom equipment, materials, and supplies</li> <li>New Trades Facility, and lab upgrades and renovations</li> </ul>	<ul style="list-style-type: none"> <li>Develop/Offer online and/or hybrid programs in CADD CSCs, Precision Machining CSCs, and Virtual Machining CSCs and AAS</li> <li>Enhance hybrid or online learning for EET &amp; credit-bearing HVAC and Welding</li> <li>Offer bridge program for prospective construction trades students</li> <li>Sustain current industry/employer partnerships and develop new ones to develop or modify curriculum; ID job profiles, etc.</li> <li>Work with the regional Workforce Investment Board on strengthening strategic partnerships to support ship building, ship repair, related manufacturing, and construction trades</li> </ul>	<ul style="list-style-type: none"> <li>Strong number of people engaged (students, faculty, industry partners)</li> <li>Curriculum materials developed</li> <li>Bridge students achieve CRCs, Digital Literacy Certification, job readiness skills</li> <li>Enrollment in new and modified courses and programs – graduates to fill high-demand jobs</li> <li>Trades Advisory Board established</li> <li>Current program advisory boards reconfigured and expanded</li> <li>Evaluation of program progress and effectiveness</li> </ul>	<p>Increase in student skills and experience through AECE pathways programs</p> <p>Increased industry awareness of VPCC programs supporting shipbuilding/repair, manufacturing</p> <p>Increased general public awareness of VPCC programs and well-paid jobs in shipbuilding/repair, manufacturing, and construction careers</p>	<p>Participants are prepared to enter the workforce in shipbuilding/repair, manufacturing, and construction jobs</p> <p>Businesses are hiring AECE graduates</p> <p>Increased numbers of AECE program graduates are working in high-demand shipbuilding/repair, manufacturing, and construction jobs</p> <p>Deepened relationships within industry, community to become more aware of available education to meet high demand for jobs in shipbuilding, ship repair, related manufacturing, and construction trades</p>	<p>VPCC is primary provider of regional workforce in shipbuilding/repair, manufacturing, and construction industry.</p> <p>Employer demand for qualified employees in CADD, machining, welding, and construction trades is being better met</p> <p>Increased individual rate of employment and regional economic vitality</p>

# APPENDIX B: FOCUS GROUP INTERVIEW GUIDES

## Trades Facility Program Student Focus Group or Interview Protocol

*Today we are going to be discussing your experiences with the courses and programs offered through the Virginia Peninsula Community College Trades Facility. VPCC received a grant to enhance these types of programs. Our goal is to understand (a) your perspectives on the quality of the Trades Facility programs, (b) your perceptions of the course formats, and (c) any challenges or barriers you have faced in the Trades Facility program. Focus group/interview findings will be analyzed and reported in the aggregate form such that individuals are not identified. While we may use quotes in our reporting, we will not do so in a way that identifies you as the source of the quote. To make sure we capture all of your valuable feedback, we would like to audio-record the focus group.*

*Do we have your permission to record this interview?*

**➔** *If no, take notes.*

### Questions about Trades Facility Program

1. What has been your experience with the programs you have participated in at the Trades Facility?

Probes: How do you feel about:

- a) The organization of the program
  - b) Timing and pacing of the program
    - o Did you have enough time to learn the required content?
  - c) Workload and requirements
    - o Was the workload reasonable?
    - o Did you understand the program requirements and have enough guidance to complete them?
2. What has gone well with the program?
  3. What would you change about the program?
  4. Do you think the Trades Facility program has helped prepare you for your career? Why or why not?

Probe: Do you think you will be able to apply the knowledge you gained in the program to your career?
  5. In what ways, if at all, is the Trades Facility program different from other similar courses and programs you have experienced or heard about?

Probe: Were these differences helpful? In what ways? (please explain)

### Questions about Program Formats

6. What do you like about the format of the program you have taken? What would you change?
7. If the Trades Facility were to offer an online option for the program, how would you feel? Would you be interested?

### Questions about Challenges and Suggestions

8. Have you experienced any challenges completing the Trades Facility program? If so, what were they?

- a. Follow up: What—if anything—has the Trades Facility program done to support you overcoming these challenges?
9. What can the Trades Facility program do to better support you and other students?
10. Is there anything else you would like to share about your experience in the Trades Facility program?

## VPCC AECE Project Faculty Interview Protocol

*Today we are going to be discussing the Virginia Peninsula Community College AECE project. Our goal is to understand your perspectives on the current state and future of the project, specifically relating to the two Core Elements: (1) engagement with industry partners and (2) the new and enhanced courses and programs AECE offers.*

*Interview findings will be analyzed and reported in the aggregate form such that individuals are not identified. While we may use quotes in our reporting, we will not do so in a way that identifies you as the source of the quote.*

*To make sure we capture all of your valuable feedback, we would like to audio-record the interview for our own notes.*

*Do we have your permission to record this interview?*

*➔ If no, take notes.*

### Background Information

1. What program do you teach in?
2. What is your understanding of the goals and activities of the AECE project?
3. How are you involved in the AECE project?

### Core Element 2 – Sector Strategies and Employer Engagement

4. What is your understanding of the role of industry partners in the AECE project?
5. What does industry partner engagement look like with your programs?
6. Does industry partner engagement look different for the credited programs and courses compared to courses and programs at the trades facility?
7. What is going well with engaging industry partners through the AECE project?
8. What—if any—challenges have you encountered engaging with industry partners through the AECE project?

### Core Element 3 – Enhanced Career Pathway Programs and Accelerated Learning Strategies

9. What do you perceive as the benefits of online/hybrid courses? What innovations are possible through these courses?
10. What are the challenges of online/hybrid courses?
11. From your perspective, how well are the online/hybrid courses and programs enhanced by the AECE project being implemented so far? What changes, if any, would you make?
12. What new courses have been added through the AECE project?



13. From your perspective, what value do these new courses add for students at VPCC?  
Are they meeting specific needs?

Wrap-Up

14. Is there anything else you would like to share with us about the AECE project?

# APPENDIX C: SURVEYS

## End-of-Course Student Survey for Credit-Bearing Courses

The end-of-course survey included the core set of questions VPCC already administers, as well as a set of questions Magnolia evaluators generated that are specific to the AECE project.

### Core VPCC questions

Course Evaluation Questions	
The course content was well-prepared, organized and presented in a clear manner.	<input type="checkbox"/> Not applicable <input type="checkbox"/> Strongly disagree <input type="checkbox"/> Disagree <input type="checkbox"/> Agree <input type="checkbox"/> Strongly agree
The class sessions, activities, tests and assignments were related to the course content.	<input type="checkbox"/> Not applicable <input type="checkbox"/> Strongly disagree <input type="checkbox"/> Disagree <input type="checkbox"/> Agree <input type="checkbox"/> Strongly agree
The instructor clearly stated the course policies, procedures, goals and expectations of the course.	<input type="checkbox"/> Not applicable <input type="checkbox"/> Strongly disagree <input type="checkbox"/> Disagree <input type="checkbox"/> Agree <input type="checkbox"/> Strongly agree
The instructor followed the policies and procedures as stated.	<input type="checkbox"/> Not applicable <input type="checkbox"/> Strongly disagree <input type="checkbox"/> Disagree <input type="checkbox"/> Agree <input type="checkbox"/> Strongly agree
The instructor posted and maintained regular in-person and/or virtual office hours and encouraged students to seek help when needed.	<input type="checkbox"/> Not applicable <input type="checkbox"/> Strongly disagree <input type="checkbox"/> Disagree <input type="checkbox"/> Agree <input type="checkbox"/> Strongly agree
The instructor encouraged questions and comments from students.	<input type="checkbox"/> Not applicable <input type="checkbox"/> Strongly disagree <input type="checkbox"/> Disagree <input type="checkbox"/> Agree <input type="checkbox"/> Strongly agree
The instructor promoted an atmosphere of mutual respect.	<input type="checkbox"/> Not applicable <input type="checkbox"/> Strongly disagree <input type="checkbox"/> Disagree <input type="checkbox"/> Agree <input type="checkbox"/> Strongly agree
The instructor responded to student inquiries in a timely and professional manner.	<input type="checkbox"/> Not applicable <input type="checkbox"/> Strongly disagree <input type="checkbox"/> Disagree <input type="checkbox"/> Agree <input type="checkbox"/> Strongly agree

The instructor graded tests and assignments in a timely and professional manner.	<input type="checkbox"/> Not applicable <input type="checkbox"/> Strongly disagree <input type="checkbox"/> Disagree <input type="checkbox"/> Agree <input type="checkbox"/> Strongly agree
The instructor facilitated learning and encouraged me to think.	<input type="checkbox"/> Not applicable <input type="checkbox"/> Strongly disagree <input type="checkbox"/> Disagree <input type="checkbox"/> Agree <input type="checkbox"/> Strongly agree
The instructor created a positive learning environment.	<input type="checkbox"/> Not applicable <input type="checkbox"/> Strongly disagree <input type="checkbox"/> Disagree <input type="checkbox"/> Agree <input type="checkbox"/> Strongly agree
I would recommend this instructor to another student.	<input type="checkbox"/> Not applicable <input type="checkbox"/> Strongly disagree <input type="checkbox"/> Disagree <input type="checkbox"/> Agree <input type="checkbox"/> Strongly agree
In comparison to other college courses I have taken, the subject matter of this course was...	<input type="checkbox"/> More Difficult <input type="checkbox"/> Of Equal Difficulty <input type="checkbox"/> Easier
I was absent from this class...	<input type="checkbox"/> Never <input type="checkbox"/> Seldom <input type="checkbox"/> Occasionally <input type="checkbox"/> Frequently
The number of hours I spent per week, outside of class time, on this course was...	<input type="checkbox"/> 1-3 hours <input type="checkbox"/> 3-6 hours <input type="checkbox"/> 6-10 hours <input type="checkbox"/> Over 10 hours
I found the textbook and/or supplemental course materials to be a valuable resource for this course.	<input type="checkbox"/> Not applicable <input type="checkbox"/> Strongly disagree <input type="checkbox"/> Disagree <input type="checkbox"/> Agree <input type="checkbox"/> Strongly agree
Please make any further comments about the instructor.	_____
Please make any further comments about the course.	_____

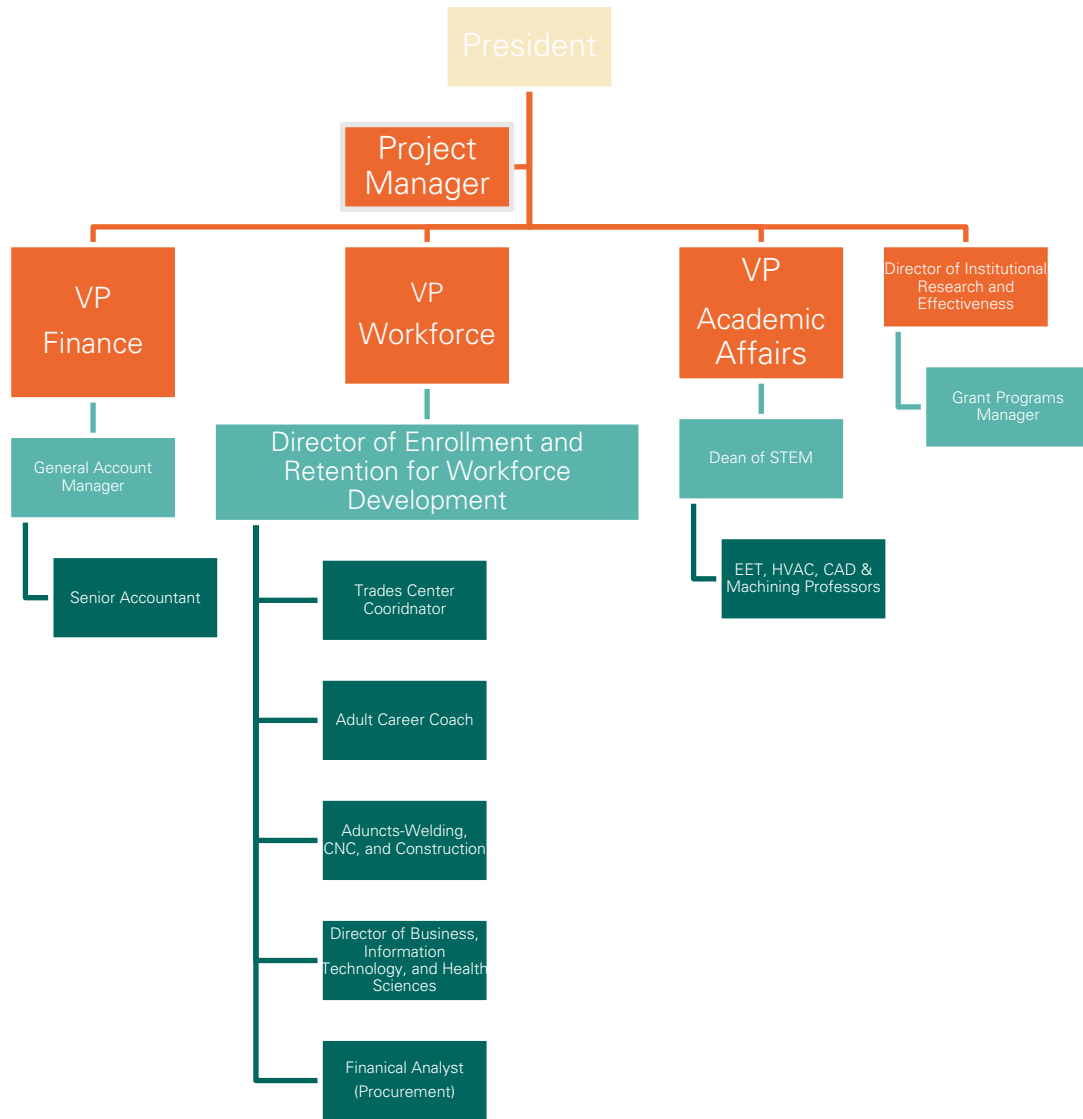
*AECE-specific questions*

<b>Course Satisfaction</b>	
Please rate your overall satisfaction with this course:	<input type="checkbox"/> Very dissatisfied <input type="checkbox"/> Dissatisfied <input type="checkbox"/> Neither satisfied nor dissatisfied <input type="checkbox"/> Satisfied <input type="checkbox"/> Very satisfied
<i>Please explain your response:</i>	_____

<i>Please indicate the extent to which you agree with the following statements about this course:</i>	
Completing this course supports my education goals.	<input type="checkbox"/> Strongly disagree <input type="checkbox"/> Disagree <input type="checkbox"/> Neither agree nor disagree <input type="checkbox"/> Agree <input type="checkbox"/> Strongly agree
Completing this course supports my career goals.	<input type="checkbox"/> Strongly disagree <input type="checkbox"/> Disagree <input type="checkbox"/> Neither agree nor disagree <input type="checkbox"/> Agree <input type="checkbox"/> Strongly agree
<b>Challenges</b>	
Please indicate any challenges you encountered while working on this course (check all that apply):	<input type="checkbox"/> Technology challenges (e.g., accessing online course materials, internet access) <input type="checkbox"/> Financial barriers (e.g., paying for tuition, purchasing course materials) <input type="checkbox"/> Time constraints <input type="checkbox"/> Course difficulty <input type="checkbox"/> Transportation <input type="checkbox"/> Course format <input type="checkbox"/> Teaching method <input type="checkbox"/> Other: _____
<b>Feedback on Course Format</b>	
Please indicate the format of your course:	<input type="checkbox"/> Completely in-person <input type="checkbox"/> Completely online <input type="checkbox"/> Hybrid (in-person and online components)
Please rate your overall satisfaction with the <u>course format</u> :	<input type="checkbox"/> Very dissatisfied <input type="checkbox"/> Dissatisfied <input type="checkbox"/> Neither satisfied nor dissatisfied <input type="checkbox"/> Satisfied <input type="checkbox"/> Very satisfied
<i>Please indicate the extent to which you agree with the following statements about the format of the course:</i>	
The course format provided me with sufficient interaction with my instructor.	<input type="checkbox"/> Strongly disagree <input type="checkbox"/> Disagree <input type="checkbox"/> Neither agree nor disagree <input type="checkbox"/> Agree <input type="checkbox"/> Strongly agree
The course format provided me with sufficient interaction with fellow students.	<input type="checkbox"/> Strongly disagree <input type="checkbox"/> Disagree <input type="checkbox"/> Neither agree nor disagree <input type="checkbox"/> Agree <input type="checkbox"/> Strongly agree
The course format fit my schedule.	<input type="checkbox"/> Strongly disagree <input type="checkbox"/> Disagree <input type="checkbox"/> Neither agree nor disagree <input type="checkbox"/> Agree <input type="checkbox"/> Strongly agree
The course format supported my learning style.	<input type="checkbox"/> Strongly disagree <input type="checkbox"/> Disagree <input type="checkbox"/> Neither agree nor disagree <input type="checkbox"/> Agree <input type="checkbox"/> Strongly agree

Did the course format present any challenges?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Unsure
<i>If yes, please explain your response:</i>	_____
Do you think you would have learned better if the course was offered in a different format?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Unsure
<i>If yes, which format would you prefer:</i>	<input type="checkbox"/> I would not prefer a different format <input type="checkbox"/> Completely in-person <input type="checkbox"/> Completely online <input type="checkbox"/> Hybrid (in-person and online components)
<b>Additional Feedback</b>	
Is there anything else you would like to share about your experience with this course?	_____

# APPENDIX D: ORGANIZATIONAL CHART



- Dr. Porter Brannon, **President**
- Mr. Geronimo Sutphin, **Project Manager; Review Coordinator**
- Mr. Steve Carpenter, **Vice President for Finance and Administration**
- Mr. Todd Estes, **Vice President for Workforce Innovation**
- Dr. Kerry Ragno, **Vice President for Academic Affairs**
- Mr. Steven Felker, **Director of Institutional Research and Effectiveness**
- Mr. Tim Crittenden, **General Accounting Manager**
- Mr. Franz Albertini, **Director of Enrollment and Retention for Workforce Development**
- Ms. Myleah Kerns, **Interim Dean, Science Technology Engineering and Math Division**
- Ms. Terry Wagner, **Grant Programs Manager**
- Ms. Gina Baird, **Senior Accountant**
- Ms. Patrecia Gary, **Trades Center Coordinator**
- Adult Career Coach – Vacant
- Adjuncts (**Welding** – Mr. Jon Cookson; **Carpentry** – Mr. James Deal; **CNC** – vacant, **Masonry** – vacant)
- Mr. Eddie Swain, **Director of Business, Information Technology, and Health Sciences**
- Professors (**EET** – Ms. Jena Frank; **HVAC** – Mr. Terrence Scott; **CAD & Machining** – Mr. Ed Morris)
- Ms. Tonya Thomas-Gray, **Financial Analyst**

**Geronimo Sutphin**, AECE Program Manager, provides direction and support for grant staff, the faculty members leading grant-funded programs, and the grant accountant and business services staff. Serves as the main point of contact and provides support and oversight for the Peninsula Regional Education Program (PREP) adult education. Serves as liaison to college staff with integral roles in the grant project, including Institutional Research and Advancement and Advancement, the STEM division dean, the Vice President and the Dean of Workforce Development, the Vice President of Academic Affairs, and the Grant Programs Manager.

**Terry Wagner**, Grant Programs Manager, oversees all administrative matters affecting the grant's progress, serves as the main source of institutional information required by the Project Manager and others affiliated with the grant, and guides and supports the Project Manager in communicating with the U.S. Department of Labor.

**Steven Felker**, Director of Institutional Research and Effectiveness (IRE), and **Samantha Saghera**, Research Analyst, provide all institutional data and labor market information required to support the grant project and its reporting, as well as liaison closely with Magnolia Consulting and assist the Project Manager on evaluation matters.

**Todd Estes**, Vice President of Workforce Development, provides oversight of matters related to the new Trades Facility, its programs, its advisory board, and its staffing needs.

**Franz Albertini**, Dean of Workforce Development, works directly with and supervises the Project Manager on all matters related to the new trades center, its Advisory Board, and its programs and manages all trades center and program staffing needs.

**Patrecia Grey**, Trades Center Coordinator, provides on-site management of the trades center facility and supports students and instructors in matters related directly to the facility.

**Jean Frank**, **Ed Morris**, and **Terrance Scott** are program heads for AECE programs in Electrical Engineering Technology, CADD and Machining, and HVAC.

# APPENDIX E: TRADES FACILITY COURSE LIST (SUMMER 23–FALL 24)

## Spring 2023

Program	Course	Course Start Date	Course End Date
Welding	FCAW Flux Cored Arc Welding	4/3/23	5/11/23
Welding	SMAW Shielded Metal Arc Welding	4/4/23	5/12/23
Carpentry	Carpentry Level 1	4/17/23	8/3/23

## Summer 2023

Welding	FCAW Flux Cored Arc Welding	5/15/23	6/22/23
Welding	Gas Metal Arc Welding	5/15/23	6/8/23
Welding	SMAW Shielded Metal Arc Welding	5/15/23	6/22/23
Welding	Gas Tungsten Arc Welding	6/12/23	7/13/23
Welding	FCAW Flux Cored Arc Welding	6/26/23	8/3/23
Welding	Gas Metal Arc Welding	6/26/23	7/20/23
Welding	SMAW Shielded Metal Arc Welding	6/26/23	8/3/23
Welding	Gas Tungsten Arc Welding	7/24/23	8/24/23
Welding	Certified Welder	7/24/23	8/31/23
Welding	FCAW Flux Cored Arc Welding	8/7/23	9/14/23
Welding	SMAW Shielded Metal Arc Welding	8/7/23	9/14/23
Carpentry	Carpentry Level 2	8/7/23	2/9/24
Welding	Gas Metal Arc Welding	8/21/23	9/14/23



**Fall  
2023**

Welding	Certified Welder	9/18/23	10/26/23
	FCAW Flux Cored		
Welding	Arc Welding	9/18/23	10/26/23
	SMAW Shielded		
Welding	Metal Arc Welding	9/18/23	10/26/23
	Gas Tungsten Arc		
Welding	Welding	9/25/23	10/26/23
Welding	Certified Welder	10/30/23	12/14/23
	FCAW Flux Cored		
Welding	Arc Welding	10/30/23	12/14/23
	SMAW Shielded		
Welding	Metal Arc Welding	10/30/23	12/14/23
	Gas Metal Arc		
Welding	Welding	11/13/23	12/11/23

**Spring  
2024**

Welding	Certified Welder	1/8/24	2/15/24
	FCAW Flux Cored		
Welding	Arc Welding	1/8/24	2/15/24
	SMAW Shielded		
Welding	Metal Arc Welding	1/8/24	2/15/24
	Gas Tungsten Arc		
Welding	Welding	1/16/24	2/15/24
	Gas Metal Arc		
Welding	Welding	1/22/24	2/15/24
Carpentry	Carpentry Level 1	2/13/24	7/2/24
Welding	Certified Welder	2/19/24	3/28/24
	FCAW Flux Cored		
Welding	Arc Welding	2/19/24	3/28/24
	SMAW Shielded		
Welding	Metal Arc Welding	2/19/24	3/28/24
	Gas Tungsten Arc		
Welding	Welding	2/26/24	3/28/24
	Gas Metal Arc		
Welding	Welding	3/4/24	3/27/24
Welding	Certified Welder	4/1/24	5/9/24

Welding	FCAW Flux Cored Arc Welding	4/1/24	5/9/24
Welding	Gas Tungsten Arc Welding	4/1/24	5/9/24
Welding	SMAW Shielded Metal Arc Welding	4/1/24	5/9/24
Facilities Maintenance	Facilities Maintenance Technician	4/8/24	8/28/24
Welding	Gas Metal Arc Welding	4/15/24	5/9/24

**Summer  
2024**

Welding	Certified Welder	5/20/24	6/28/24
Welding	FCAW Flux Cored Arc Welding	5/20/24	6/28/24
Welding	Gas Tungsten Arc Welding	5/28/24	6/28/24
Welding	Gas Metal Arc Welding	6/3/24	6/27/24
CNC Machining	CNC Milling: Operations	6/17/24	7/24/24
Welding	Certified Welder	7/1/24	8/9/24
Welding	SMAW Shielded Metal Arc Welding	7/1/24	8/9/24
Masonry	Masonry Level 1	7/1/24	10/25/24
Welding	Gas Tungsten Arc Welding	7/8/24	8/8/24
Welding	Gas Metal Arc Welding	7/15/24	8/7/24
Carpentry	Carpentry Level 2	7/23/24	12/11/24
Welding	Certified Welder	8/12/24	9/20/24
Welding	FCAW Flux Cored Arc Welding	8/12/24	9/20/24
Welding	SMAW Shielded Metal Arc Welding	8/12/24	9/20/24
CNC Machining	CNC Milling: Programming, Set Up & Operations	8/13/24	10/10/24

Welding	Gas Tungsten Arc Welding	8/19/24	9/20/24
CNC Machining	CNC Milling: Operations	8/21/24	10/17/24

**Fall  
2024**

Facilities Maintenance	Facilities Maintenance Technician	9/9/24	2/19/25
Welding	Certified Welder	9/23/24	10/31/24
Welding	FCAW Flux Cored Arc Welding	9/23/24	10/31/24
Welding	SMAW Shielded Metal Arc Welding	9/23/24	10/31/24

# APPENDIX F: AECE COURSE STUDENT SURVEY DATA (SPRING 21–FALL 24)

Course Title Spring 2021–Fall 2024 ( <i>September</i> )	Number of Survey Responses for Each Course
Carpentry Level 1	9
Certified Welder	15
FCAW	24
GMAW	21
GTAW	23
SMAW	26
<b>Total survey responses</b>	<b>118</b>