



Scaling Apprenticeship

Emerging Practice Spotlight



Pennsylvania College of Technology

*H-1B Scaling Apprenticeship
Grantee (Advanced
Manufacturing)*

Modular Industry-Driven Apprenticeship Strategies (MIDAS)



**Pennsylvania
College of Technology**
A Penn State Affiliate



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Pennsylvania College of Technology: Flexible Modular Registered Apprenticeship Programs for Incumbent Workers

The Pennsylvania College of Technology (Penn College) sponsors multiple Registered Apprenticeship Programs (RAPs). With financial support through the Scaling Apprenticeship Grant from the USDOL, the Modular Industry-Driven Apprenticeship Strategies (MIDAS) program reconfigures existing traditional programs to meet the complex, rapidly changing needs of the Advanced Manufacturing sector by using core modules that are competency-based, flexible, customizable, and stackable to meet employer needs for multiple occupations. With Penn College acting as the RAP sponsor, employers recruit apprentices from their incumbent or newly hired employee workforce but do not necessarily hire people specifically for the MIDAS program.

Evolution of the MIDAS Model

Penn College, formerly known as Williamsport Technical Institute and later Williamsport Area Community College, is a national leader in applied technology education. Penn College created the MIDAS program for the Scaling Apprenticeship grant, greatly expanding and building upon its current RAPs. Penn College began to design and roll out its modular model before it received its Scaling Apprenticeship grant. Once Penn College received the grant, it was challenging to convince employers to invest in a multi-year model (MIDAS RAPs range from 1-year to 4-year duration). Instead, by capitalizing on the modules as year-long stackable unregistered apprenticeships that each culminate in an industry-recognized credential, Penn College provided employers with a flexible model they could support. Importantly, Penn College acts as the apprenticeship sponsor alleviating the administrative burden on employers that often comes with implementing Registered Apprenticeship Programs.

MIDAS evolved out of the extensive experience of Penn College's Workforce Development department providing customized training to employers in a variety of industries. Heeding the concerns of employer clients that training programs meet "just-in-time" needs and provide "right-fit" solutions, the Workforce Development

"It was nice to build upon the knowledge I learned each year. I could see how the information was to be applied to my actual work. I could apply what I was learning in my classes immediately. I also like how they taught us in steps instead of just throwing all of the information at us at once."

Carl Smith, Apprentice, First Quality

department's leadership set about reimagining Registered Apprenticeships. Their efforts resulted in a competency-based approach that divided the apprentice-able skill content of an occupation into manageable units based on skill domains. Each module incorporates the five hallmarks of Registered Apprenticeship – multiple modules fulfill the training for specific SOC-designated occupations. By stacking multiple modules – each one structured as a RAP – the employer selects the competency domain(s) they are looking to train.

In this competency-based model, apprentices are evaluated using pre-assessment tests prior to the start of the apprenticeship to measure proficiency based on their prior learning, credit for industry credentials, and experience. Apprentices who are scored competent receive credit for the respective technical content and may bypass the technical instruction in a module.

The MIDAS stand-alone modules help employers satisfy skills gaps in their workforce by building in customization to the model. For instance, employers needing the skills of a mechatronics technician may enroll multiple incumbent workers in the four-module, 4-year Mechatronics Registered Apprenticeship - i.e., Mechanical Components, Industrial Electricity, Fluid Power, Programmable Logic Controllers (PLCs). One apprentice may need just Industrial Electricity and PLCs for what is currently a two-year unregistered apprenticeship while another needs all skills and will take all four modules and is engaged in a 4-year RAP.

"We finally have a training program that apprentices feel is beneficial and applicable."

Kimberly Weingartner, Vice President for Team Member Initiatives, Ellwood Group Inc.

The MIDAS program cohort-based delivery is designed to provide maximum flexibility for employers seeking to enroll multiple apprentices. Related training instruction (RTI) is not dependent on a college course schedule, giving Penn College the ability to schedule RTI in blocks of time grouping apprentices from multiple employers. Virtual RTI delivery eases the burden of apprentice travel and downtime from their jobs. This structure produces consistency of training and flexibility when scheduling larger numbers of apprentices, especially as the RAPs offered by Penn College are operating in seventeen states and Puerto Rico. The MIDAS program has served 732 apprentices in 83 companies.

Essential Components

The MIDAS model divides training content into modules that instruct apprentices in the core competencies of an apprenticeable occupation. All MIDAS RAPs stack these competency-based modules over a multi-year period. Each individual MIDAS module is aligned with an industry credential, giving employees the opportunity to earn certificates of completion.

Each MIDAS module is structured as an unregistered apprenticeship that can last between 9 and 18 months (most are a year in duration). Employers have the flexibility to enroll individual employees in selected modules or enroll an entire cohort of employees in a MIDAS program. Further, employers may customize the on-the-job training (OJT) work processes within each module to match their specific needs. Each Registered Apprenticeship is composed of multiple modules and the length of RAP can vary from 18 months to 4 years.

The MIDAS modules and apprenticeships are designed to meet the standards of the Pennsylvania Department of Labor and Industry and the US Department of Labor and incorporate the five hallmarks of a high-quality RAP. The MIDAS model packages each module as its own apprenticeship with 144 hours of RTI, 2,000 hours OJT work processes, and alignment to an industry credential each year of the RAP. While Penn College provides the RTI for all MIDAS Apprenticeships, the Workforce Development Department offers the module schedule and is not dependent on a college course schedule.

Penn College also has complementary soft-skills modules in leadership and business topics, such as frontline supervisor, project management, and Lean Six Sigma. These modules are structured as short-term training programs, include RTI and OJT, and are aligned to an industry credential. Employers may choose to enroll apprentices in one of the complementary apprenticeships as stand-alone training or stack the leadership module with a registered MIDAS apprenticeship to upskill employees moving into positions of greater responsibility.

Figure 1 illustrates the MIDAS model for the mechatronics RAP with the flexible complementary modules.

Next Steps

Penn College is developing a digital handbook that will include mentorship training materials to educate employers, journey worker mentors, and apprentices about leveraging on-the-job mentoring within their workforce to develop an apprenticeship culture. Penn College is evaluating the best way to integrate mentorship training in the MIDAS program and is considering offering pre-recorded sessions, interactive videos, and instructional content to address issues related to diversity, equity, and inclusion, as well as continuous improvement.

Penn College recently created an Associate in Applied Science Degree in Apprenticeship Technology that recognizes apprentices' achievements in a registered apprenticeship. Apprentices who have completed a minimum of two years of a registered apprenticeship may earn up to 39 credits toward the Apprenticeship Technology A.A.S. Degree. The remaining credits to complete the degree, which includes courses from the College's general education core, may be earned through online or on-campus classes.

Finally, Penn College is in the process of registering four 1-year mechatronics modules as separate RAPs.

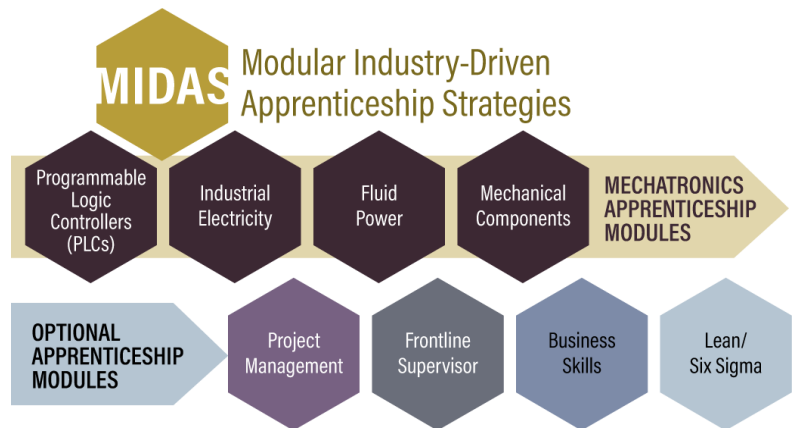
MIDAS in Action

As an example of how the MIDAS program works, **Figure 2** below shows the trajectory of several apprentices from three different companies in a Mechatronics RAP single cohort. The employers each have slightly different needs, as demonstrated by the scenarios that follow Figure 2. Apprentices go through the modules as necessary, including the optional soft skills modules. For reference, module cohorts at Penn College typically enroll 15–20 apprentices from one or multiple companies

Figure 2: Example Trajectory for Mechatronics RAP Cohort

Module	Module 1 Mechanical Components	Module 2 Industrial Electricity	Module 3 Fluid Power	Module 4 Programmable Logic Controllers
Dates	April '19 – March '20	April '20 – March '21	April '21 – March '22	April '22 – March '23
Company A	Apprentice A1 Apprentice A2 Apprentice A3	Apprentice A1 (A2 withdrew) Apprentice A3	Apprentice A1 Apprentice A3	Apprentice A1 Apprentice A3
Company B	Apprentice B1 Apprentice B2	Apprentice B1 Apprentice B2		
Company C	Apprentice C1 Apprentice C2 {Apprentice C3 – Waived}		Apprentice C1 Apprentice C2 Apprentice C3	Apprentice C1 Apprentice C2 Apprentice C3
Optional Apprenticeship Modules		Lean/Six Sigma Black Belt Apprentice C3		Front Line Supervisor Apprentice A1

Figure 1: Mechatronics Apprenticeship Modules



Scenarios

Company A: The employer expects apprentices to complete all four modules.

- Apprentices A1 & A3 (in bold) will complete all four modules of the Registered Mechatronics Apprenticeship and will be eligible for journey worker papers.
- Apprentice A2 withdrew from the apprenticeship after Module 1
- Apprentice A1 is enrolled in the Front Line Supervisory Apprenticeship Module towards the end of the Registered Apprenticeship.

Company B: The employer is interested in apprentices completing only Modules 1 and 2 for their training needs.

Company C: The employer wants focused training provided in Modules 1, 3, and 4 for their apprentices.

- Apprentice C3 took a module pre-assessment and proved competency in Mechanical Components. The employer permitted them to be waived for Module 1.
- Apprentice C3 is in line for promotion to Quality Inspector. Their employer enrolls them in Lean/Six Sigma Black Belt Apprenticeship Module.

Elements of Success

The MIDAS program is predicated on three concepts: employers as partners, stackable modules, and flexibility. Penn College believes these three concepts have led to several notable outcomes.

Employers as Partners	Module Model	Flexibility/Adaptability	Outcomes
• PCT as Apprenticeship Sponsor – lighten the burden for the employer • Focus on customized needs to fill a skills gap • Apprentices are incumbent workers • Help build an apprenticeship culture with a stackable training model • Journeyworkers contribute to the training program as OJT mentors	• Competency-based modules • Multiple related modules stack for a registered apprenticeship lasting 18 months to 4 years. • Each module incorporates key apprenticeship components – Minimum of 144 hours of RTI – 2,000 hours of OJT – Aligned to an Industry Credential – Apprentice works full-time throughout – Employer assures safe working environment, supervision and follows EEOC regulations • Complementary apprenticeship modules add leadership and business skills	• Apprenticeships run independently of the College schedule or course offerings • Employer may choose individual modules to train for specific needs • Employer may participate in single- or multiple-employer RTI cohorts • RTI is scheduled in four-hour, once-per-week blocks enabling scheduling consistency • Virtual/hybrid RTI delivery—apprentices do not need to leave the workplace • Customization of OJT work processes list to fit employer needs	• Apprentices completing all modules of a Registered Apprenticeship earn Journeyworker papers • Industry Credentials available for individual modules • Increasing wage scale for apprentices • Apprentices become part of the apprenticeship culture as trained OJT mentors • Articulation of registered apprenticeship with PCT Apprenticeship Technology A.A.S. Degree program

Tips and Strategies for Scaling Apprenticeship Grantees

- Look at modules as pieces of the whole. First, analyze the core competencies for an apprenticeable occupation in totality. Then divide the skill sets into core segments that can stand on their own as a training unit structured as an apprenticeship.
- Understand employers' skills gaps and give them training that fills those gaps. Employers are more likely to participate when the apprenticeship addresses their immediate needs.
- Break the mold. Design RTI schedules that work within employers operating schedules – e.g., a four-hour RTI session meeting Wednesdays, 8 a.m. – 12 p.m. for 36 weeks = 144 hours RTI.
- Lead them to a bigger picture. Stackable apprenticeship modules that result in a Registered Apprenticeship may lead to a sustainable training plan for an employer as they look to improve other areas of their workforce.
- Be the expert on the background workings of apprenticeship. As the apprenticeship sponsor, Penn College carries the workload of apprenticeship design, registration, and administration. We minimize the work for the employer so that they can focus on training their workforce and increasing productivity.
- Thinking scale? Think cohorts. Apprenticeship programs using modular RTI block scheduling open the door for apprentice cohorts that engage multiple employers at one time.

Resources

- [Penn College Workforce Development Apprenticeship web page](#)
- [Penn College Apprenticeship Flyer](#)
- [Penn College Advanced Manufacturing Apprenticeship Flyer](#)

More Information

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