

NWCCD Strategy 1: Developing and Delivering the Hybrid HVAC Apprenticeship Certificate

Overview:

Heating, ventilation and air conditioning systems are imperative to homes, schools, hospitals, businesses, factories, entertainment venues and more. Keeping the in-doors temperatures warm in the winter and cool in the summer, climate control technology has a monumental impact on daily life across the nation. HVAC professionals and technicians help manage climates, air filters, refrigeration and more using industry-leading technology. NWCCD's HVAC Apprenticeship Certificate program is designed for working professionals looking to complete the education requirements to reach licensed HVAC Journeyman status. The HVAC Apprenticeship Certificate is available at Sheridan College. This documentation reviews a hybrid option of the current HVAC Certificate, modified to complete the classroom/lab requirement in a more efficient manner while still meeting the requirements of the state of Wyoming. The current certificate takes four years to complete when combined with 8,000 hours of work to meet the State of Wyoming and Department of Labor (DOL) Office of Apprenticeship requirements.

Targeted Population:

Individuals looking to complete the HVAC Apprenticeship Certificate Program to meet the State of Wyoming and Department of Labor (DOL) Office of Apprenticeship educational requirements. The Hybrid HVAC Apprenticeship Certificate program at Gillette College is designed to attract a particular type of student looking to complete a certificate program specifically for individuals striving to reach the Journeyman status, gain advanced knowledge in specific areas of HVAC work and complete professional requirements necessary for state and federal regulation satisfaction.

Delivery Environment, Market Needs, and Projected Growth:

To best achieve the objectives outlined in Strategy 4, it was decided that competency-based modules would be developed by faculty and instructional designers, both for the Face-to-Face component and the hybrid component of each course. The required courses for the apprenticeship certificate are currently delivered in a Face-to-Face environment, with all course work and lab requirements being completed in person. Hybrid components are non-existent and do not take the place of any physical requirements.

The development of a hybrid delivery environment opens up the opportunity for students to continue working while attending school and complete the required components of a course. This type of delivery environment can align to accommodate the working schedules of students and expectations of employers. The delivery environment will also continue to provide and maintain high levels of engagement in the required curriculum, an important aspect of the certificate program since the training directly links to workplace knowledge, understanding, and growth.

Currently the economic downturn in Wyoming has impacted the employment levels in Sheridan County, Campbell County, and Johnson County. Offering a hybrid apprenticeship certificate allows the

opportunity for registered apprentice electricians to move through courses more efficiently while also meeting the work hour requirements to test for the Journeyman Electrician licensing exam.

The Hybrid HVAC Apprenticeship Certificate program educates registered apprentice electricians in: a) advanced learning of electricity and troubleshooting procedures; b) meeting the demand for trained industrial professional that currently hold a registered apprentice status with the State of Wyoming; c) gaining the knowledge, skills, and abilities needed by HVAC specialists seeking a Journeyman designation; d) skillsets that will increase student's value in alignment with professional opportunities within the HVAC industry.

The field of Heating, Air Conditioning and Refrigeration Mechanics is growing rapidly. HVAC mechanics, installers and technicians work in a variety of settings, from schools to homes, hospitals to arenas, ensuring appropriate climate control and temperatures. HVAC professionals are highly trained in a variety of climate control technologies to meet the demands of the field. The U.S. Bureau of Labor Statistics predicts 21% job growth from 2012-2022, adding more than 55,000 new jobs.

HVAC technicians manage heating, air conditioning, ventilation, cooling and refrigeration systems, controlling air quality and temperature in homes, schools, buildings and other settings. As an industry professional with NWCCD's HVAC Certificate, you can earn Journeyman status in the HVAC field and work on a variety of related systems, such as:

- Air conditioning systems
- Refrigeration systems
- Heating systems
- Mechanical piping systems
- Electric systems
- Ventilation systems

The Need for Accelerated, Online, and Hybrid Delivery Models:

To meet the goals of increased enrollment, retention, and completion rates, the development and delivery of academic models in a variety of formats is necessary. A variety of delivery models for courses, certificates, and degree programs allows traditional and non-traditional students to explore educational options that align with their overall goals. Introducing the development and delivery of accelerated, online, and hybrid course models provides options to the working student, the single parent student, the recently laid-off student, or a traditional student looking for schedule alternatives. Current research supports the theory that based on the population and area the community college serves the lower rates of enrollment, retention, and completion are directly related to the lack of courses, certificates, and programs offered in multiple delivery models.

Originally, community colleges were designed to serve lower socioeconomic sectors, provide higher education at reduced tuition costs, and appeal to non-traditional students living in or around the area.

The non-traditional population is often older, take into consideration family and professional obligations, and are more likely to face scheduling conflicts. To avoid a “cooling out” phase where students struggle with developing a compatible schedule that can include both life responsibilities and academic expectations, which may eventually lead to discontinuation of the chosen educational pathway, the development and use of accelerated, online, and/or hybrid models are ideal for continuing to peak student’s interest in higher education.

The development of accelerated, online, and hybrid delivery models works to accommodate the professional schedules of students and employers. With the recent economic downturn in Wyoming, many students are attempting to pursue a stronger educational background while also looking for continued employment. The development of multiple delivery models and a high level of engagement in presented curriculum is still possible, meeting a critical component of community college mission statements in the twenty-first century. With just offering the traditional 16-week semester that is based in a physical classroom the needs of the student population are not being met. Including designed delivery models that feature accelerated, online, and hybrid components meets the need of the population and allows for a quick turnaround on expanding student’s educational background.

In comparison to the traditional classroom delivery environment, a hybrid environment is more up to date in meeting student needs, especially those individuals who are part of the non-traditional population. The traditional classroom delivery environment no longer serves the needs of the entire student population at the community college level and, instead, may be detrimental to the reasons given by students for not enrolling, continuing their degree programs, or transferring to a four-year state school. In the twenty-first century, learning in a hybrid model is a popular request and should be part of the options students are given when exploring educational opportunities. Developing and implementing new models of education, along with the traditional classroom environment, provides students with options that best suit academic and professional needs; capitalizes on student’s strengths; availability to attend school; and supports future endeavors where theory and competency-based knowledge are necessary to excel.

Project Methodology:

The current HVAC Apprenticeship Certificate was reviewed, including required classes, length of certificate, and federal and state requirements for enrolled students who are looking to achieve Journeyman status once the certificate and work requirements are completed. The current certificate runs over a four-year period. One course is taken each year (once in the fall semester) for a total of four courses over four years. During and in-between course enrollment, students are working toward completing 2,000 hours of apprentice work each year, for a total of 8,000 hours over four years. The course design is 100% in the classroom, with face-to-face instruction and lab work. Students spend three hours per week in the physical classroom for a 3-credit course for a 16-week semester.

To develop and design a course schedule, a hybrid component is necessary. The course design will be 60% in the classroom and 40% online. Students will still attend the physical classroom three hours per

week in a 16-week term. The remaining time will be spent online learning through competency-based modules.

Competency-based modules were developed for the online portion of the course. The modules will assess student's knowledge skill set understanding before the developed activity is accessed. Once the module is completed (via activities and assignments), students will be assessed on mastery of skill set. While students attend the accelerated hybrid courses they will still be eligible to maintain a professional work schedule. Face-to-Face components of the required courses will be offered in the evening to accommodate work schedules.

The hybrid courses will continue to meet state and federal requirements. After completion of the hybrid certificate and meeting the required work hours, students will be eligible to test for a Journeyman Electrician license.

Case Management Process:

Case managers will need to be made aware of the characteristics and expectations of the accelerated electrical apprenticeship certificate. Case managers will be trained on how the changes to the certificate program benefit the student experience, how a hybrid certificate program should be introduced to potential students, and the details of the specific certificate program including expected time commitment, online expectations, and format of a hybrid course. Because there are state and federal requirements involved with the apprenticeship certificate, case managers will also be educated in the details of the requirements so that students who have questions can be provided appropriate and accurate information.

Developing a Career Pathway:

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- Air conditioning systems
- Refrigeration systems
- Heating systems
- Mechanical piping systems
- Electric systems
- Ventilation systems

Timeframe for Development:

Design, development, and adapting of the Hybrid Electrical Apprenticeship certificate program covers the period of August 2016 through March 2017 under the DOL-ETA TAACCCT Round 3 grant award. Initially developed under the DOL-ETA High Job Growth Initiative grant, the delivery model has been modified to break the certificate program into 60% traditional classroom environment and 40% online delivery compared to 100% traditional classroom and lab environment. Design and development of the certificate program was finalized in March 2017 with the remaining time used to evaluate the efficacy of the model through faculty feedback, student reporting, and analysis. A faculty member who is also part of the industry in Sheridan, WY reviewed the developed materials and provided feedback about what would need to be altered or aligned to meet specific state requirements based on changes in regulations and federal laws.

Lessons Learned:

The attempt at a hybrid HVAC Apprenticeship Certificate is possible, however, the state regulations and federal laws take precedent on how the certificate courses are delivered. If a requirement for physical interaction time becomes required, the opportunity for a hybrid certificate to be in place may be jeopardized. In addition, while the basic development of the hybrid certificate courses can be replicated by any program, the specificity of the state regulations and federal laws will need to be taken into consideration and implemented as appropriate.

In addition to educational challenges, NWCCD must consider the population in its service area. The targeted population served by the HVAC Apprenticeship Certificate is a working demographic; students do not have the workplace flexibility to be absent from their employment to participate in the numerous consecutive contact hours required to condense a course.

Finally, based on Department of Education standards and educational theory and practice, in order for optimum learning to occur courses should strike a balance between exposure to instructional materials and student absorption time. Hands-on courses are generally more effective in an accelerated model, where general and theoretical education classes require more time for student reflection. The HVAC Apprenticeship Certificate focuses on individuals who already have experience in the industry and are looking to increase their professional marketability by qualifying for and passing state examinations within their specific area or skill. With state regulations, federal laws, and the need for hands-on experience, some parts of the HVAC Apprenticeship Certificate may require more Face-to-Face time than what the hybrid model allocates. Based on the rules that need to be followed, replication of the model is possible, consideration of specifics to any program need to be incorporated.

Accelerated Heating, Ventilation, and Air Conditioning Systems (HVAC) Apprenticeship Certificate No Options Pathway					
Full Name:			Initial Advising Date:		
Preferred Email:			Home Phone #:		
NWCCD ID #:			Cell Phone #:		
1st 8 wk term	Credits	Requirement	2nd 8 wk term	Credits	Requirement
FALL Semester			FALL Semester		
	6	HVAC 1520 – HVAC Apprenticeship I		6	HVAC 1540 – HVAC Apprenticeship II
3rd 8 wk term	Credits	Requirement	4th 8 wk term	Credits	Requirement
SPRING Semester			SPRING Semester		
	6	HVAC 1560 – HVAC Apprenticeship III		6	HVAC 1580 – HVAC Apprenticeship IV

The HVAC Apprenticeship Certificate provides educational components for the Sheridan area state-approved HVAC Apprenticeship that complements the 2000-hour-per-year, working component needed to meet the yearly requirements set by the Bureau of Apprenticeship and Training, Wyoming Department of Labor, for apprentices to become eligible to sit for the journeyman’s exam.



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