



Welding Technology, Associate in Applied Science
Welding Fundamentals, Specialized Diploma
Welding & Fabrication, Certificate
Academic Program Review

Years Covered: 2017 - 2022

Authors: Dino Forst, Program Manager, Welding Technology
Ken Nasatka, Director, Automotive, Industry & Manufacturing
Sean Moran, External Auditor, Welding Engineering General
Dynamics – Electric Boat

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I. Introduction

A. Provide the current purpose of the program.

Northampton's Welding Technology A.A.S (Associate in Applied Science). degree program is designed to prepare graduates to enter a modern welding setting with the technical and academic competence in fabricating, blueprint reading, industrial heat treating, metallurgy and safety protocols. The program offers career-specific coursework for a student wishing to complete their studies within two (Specialized Diploma) three (certificate) or four semesters (A.A.S). The program also provides course offerings that prepare graduates to work in a specialized manufacturing environment.

Student studies will include state-of-the-art welding equipment and principles from the American Welding Society (AWS). You will learn the marketable skills required to work effectively with other people in a manufacturing environment. We emphasize the development of professional attitudes, values, and ethics. As you progress through the program, you will gain critical thinking, priority setting, and decision-making skills needed in today's quality-oriented business environment.

Graduates of this AAS degree program may continue to a Baccalaureate program.

B. How does the program advance the mission or strategic focus areas (SFAs) of the college? (Reflect on the program's curriculum, success rates, etc. to highlight where the program specifically promotes one or more of the SFAs)

The Welding Technology program keeps pace with industry in testing equipment, AWS codes and standards. Most of the courses employ the usage of our LMS system to foster technical proficiency. Curriculum and lab projects are updated every few years as technology advances. New test equipment, and robotic cells have been added to the welding program.

C. Comment on awards, honors, noteworthy accomplishments, or unique features related to the program during the review period.

Welding Program Manager, Dino Forst was elected 1ST chairperson of the Lehigh Valley section of the American Welding Society. Dino was also awarded 2019 Business Partner of the Year from Warren County Technical School, CAREERTECH-NJ. Dino was also the recipient of the District Director Certificate Award. Northampton's Welding Program was awarded a \$25,000 Welder Workforce Development Grant from the American Welding Society.

D. Catalog Description

1. The current program catalog description is included in [Appendix A](#).
2. Does this description accurately describe the current program?

Yes X No

E. Previous Program Review

1. Provide the date of the last program review: 2/28/2018
2. List the recommendations from that review and indicate the extent to which these recommendations have been implemented. Indicate "I" for recommendations implemented, "IP" for those in progress, and "NI" for those not implemented. For those recommendations not implemented, please explain the circumstances.

Table 1. Status of Recommendations from Last Program Review

Recommendation	Status
WELD 135 The students do draw a weld symbols in the final exam. WELD 110 The students are verbally instructed on all lab projects.	I
WELD 105 The 20.0 grade scale does not exist in the syllabi, It just happens to be the number of the grade scale in the order of items in the syllabi. Added Midterm percentage for grade weighting.	I
WELD 245 Research/Lab reports and homework's are assigned to students.	I
WELD 230 Midterm exam% added to syllabi.	I
WELD 235 Syllabi changed to reflect Class Participation and Safety.	I
WELD 224 2G changed from upward progression to Horizontal.	I
WELD 205 and WELD 110 No need to change course name we teach multiple Semi-Automatic	I
Processes. The students are given verbal instructions prior to each lab. It is their responsibility to take notes. We also give them verbal feedback on what we want them to improve on in the lab at the moment they are making mistakes. Each student is told to have a journal so they can later refer back to the Program Manager, Program Director and Dean to review recommendations.	I

II. Program Outcomes

A. Program-Level Student Learning Outcomes (see [Appendix B](#)).

1. Have the PLOs been updated or revised since the last program review?

Yes _____ No X

B. Program-Level Performance Indicators

1. Describe the key indicators used to assess the quality and effectiveness of your program relative to its core purpose and the college mission. Best practice is to utilize 8-10 key performance indicators. Program outcomes align to standards of American Welding Society.

At a minimum, provide data related to retention, persistence, completion, and transfer/job-placement/licensure in [Appendix C](#) (year over year trend data for the last five years). Then select four to five other indicators as applicable to include in [Appendix C](#) as well. Suggestions include:

- Indicators of Student Success
- Transfer/job-placement
- National, state, or disciplinary benchmarks
- Student Satisfaction/Feedback, including CCSSE data
- Alumni Survey (conducted by Institutional Research)
- Employer Feedback/Placement Reports (Career Services)
- Other benchmarks as appropriate

Please consult the data provided through the program review website and discuss the unique indicators that demonstrate how your program is fulfilling its purpose as well as supporting the overall institution and/or other programs (i.e., STEM courses supporting Allied Health programs)

III. Environmental Scan

- A. Identify current trends in the program's field or discipline. During the audit year, the program has added the following trainers/equipment.

Augmented Arc trainers, used for new and advanced student

Ultrasonic testing equipment. And other Nondestructive testing methods of weldments.

Positive Metal Identifier.

Mechanical beveling equipment (Co – Hog). Mill- Hog.

B. What has the program done to respond to these trends?

WELD 105,110,123,125 have all implemented the augmented welding classroom.

WELD235 Has implemented UT testing equipment, MT and PT testing of weldments.

WELD255 Metallurgy Has implemented a Positive Metal Identifier.

WELD 110,205,224, are now using the new technology Co-Hog and Mill-Hog .

C. Does the program have any external transfer articulation or joint admissions agreements?

Yes X No

If yes, complete Table 2.

Table 2. Top five program-to-program articulation agreements.

Name of the Institution	Type of Agreement	Average number of student who transfer here each year	Date agreement was last reviewed or updated
Penn State School of Technology	Signed Articulation for Welding	3	2019
Bloomsburg University of Pennsylvania	Signed Articulation for Welding	1	2019
East Stroudsburg University of Pennsylvania	Signed Articulation for Welding	2	2019
Franklin University of Pennsylvania	Signed Articulation for Welding	0	2019

Have any problems been encountered concerning the transferability of courses?

Yes No X

D. Does the program have any inbound articulation agreements?

Yes X No

If yes, complete Table 3.

Table 3. Inbound articulation agreements.

Name of the Institution	Type of Agreement	Average number of student who transfer here each year	Date agreement was last reviewed or updated
Bethlehem Area School	Articulation	8	2022
Career Institute of Technology	Articulation	6	2022
Monroe Career and Technical School	Articulation	1	2021
Lehigh Carbon and Technical institute	Articulation	1	2022
Upper Bucks and Middle Bucks	Articulation	2	2022

- E. Provide regional workforce data with respect to (1) the number of people currently employed in the field; (2) projections for employment growth or decline; and (3) the current salary range. Discuss the implications of these numbers for the program.

Occupation Title: Welders, Cutters, Solders, and Brazers

Occupation Code: 51-4121

Location	Estimated total employment (excludes self-employed)	Median Hourly Wage	Median Annual Wage	Mean Hourly Wage	Mean Annual Wage	Job Outlook 2021 - 2031
National	428,000	\$22,60	\$47,010	\$23.1	\$48,290	2% (Slower than average)
State - PA	17,320	\$22.66	\$41,070	\$23.20	\$48,250	
Local Area*	820	\$22.75	\$47,320	\$22.97	\$47,780	

***Local Area:** Allentown-Bethlehem-Easton, PA-NJ (includes Carbon, Lehigh, and Northampton PA Counties and Warren County NJ)

- F. Does the program have any community partnerships or other associations or memberships of note?

Yes X No

If yes, describe the nature of these relationships

- American Welding Society (NCC host the AWS welding competition)
- Boy Scouts of America (NCC host the Boy Scouts welding Merit Badge events)
- Skills USA competition – need to revive post Covid

- G. Does the program have an advisory committee?

Yes X No

If yes, list the names and affiliations of the advisory committee members

Welding Advisory Board Meeting Members

- Mathew Esposito - Estimating Manager Stateline Fabricators
- Chad Feilbach - Warren County Technical School/CWI/BAS, Welding Engineering
- Justin Heistand - ITW Welding North America District Manager
- Robert Knect - Tobyhanna Welding Supervisor
- Sean Moran - Philly Shipyards/ District Director AWS/CWI
- Kurtis Sampson - Bethlehem Area Vocational Technical School
- Michael Wiswesser - Director, Welder Training and Testing Institute

- H. How often does the advisory committee meet? 1 X per year
Minutes from the last two meetings are in [Appendix D](#).

- I. Specify advisory committee contributions c program's growth and development, including recommended curricular changes.

The advisory committee contributions connection to the industry. Ensuring curriculum remains current to industry needs. Use as specific topics (SME's) that will lead to higher enrollment and well trained graduates on the latest technology, such as ultrasonic testing and robotics.

Communication and critical thinking is important to a company. Soft skills as well. Helping students know and understand these are very important.

IV. Curriculum

A. Curriculum Matrix

1. The program's most recent curriculum matrix for the program's learning outcomes can be found in [Appendix E](#).
2. The key abilities matrix (see [Appendix F](#)) indicates how the program satisfies NCC's general education core requirements.
3. Based on the curriculum matrix and general education core review, are there any changes that need to be considered?

Yes _____ No X

If so, describe these changes. N/A

B. Program and co-curricular maps are in [Appendix G](#) and [Appendix H](#).

Based on the program map, validate the adequacy of the organized, intentional, sequential learning experiences.

Any changes to the program reflect Industry trends.

1. Based on the co-curricular map, discuss the relationship between student learning and co-curricular experiences.

The student learning experience of the technical aspects of welding is focused on lecture and lab work. Students tour manufacturing facilities and are made aware of many opportunities in welding. All students who want to work as a welder in industry get jobs.

2. Are there any changes to the program map or co-curricular map that need to be considered?

Yes _____ No X

C. Discuss career development and experiential opportunities for students within your program (e.g., internship, capstone, career research courses, service learning, etc.)

Students have done internships with several companies throughout the Lehigh Valley.

Most manufacturers will work with student's school schedule and obtain full time work.

1. Based on a review of these opportunities, are there any changes that need to be considered?

Yes X No _____

If so, describe these changes.

Students are asked to be taught certain welding tasks by employees. We are following up with their request as they come in.

D. Modality Awareness

If courses are offered in online or hybrid formats, discuss their effectiveness assessment.

1. Are there any changes to these formats that need to be considered?

Yes _____ No X

V. Assessment

- A. Append the current version of the program's Assessment Plan ([Appendix I](#)).
- B. Using Table 4, provide a summary of the assessment activity since the last program review.

Table 4. PLO Assessment (**WELD105, 110, 123, 125 and 135 courses assessed**)

Program Learning Outcomes (include all program outcomes that are listed in the College Catalog)	Describe how the outcome has been assessed in the last five-year period.	What were the results of that assessment? Acceptable =>75% or > Significant or Fail = <75%
Demonstrate an ability to work independently and collaboratively.	Classroom lecture and assignments & labs.	Acceptable
Analyze and present data in an acceptable and standardized manner. (Gen Ed Analyze)	Classroom lecture and assignments & labs	Acceptable
Solve common weld ability problems	Classroom lecture and assignments & labs	Acceptable
Demonstrate a basic framework of technical vocabulary and graphics interpretation. (Gen Communicate)	Classroom lecture and assignments & labs	Acceptable
Demonstrate observational, integrative, and synthetic skills. (Analyze)	Classroom lecture and assignments & labs	Acceptable
Demonstrate the proper use and care of common welding equipment.	Classroom lecture and assignments & labs	Acceptable
Apply basic defect prevention philosophy and techniques to achieving weld integrity. (GEN: Ethics)	Classroom lecture and assignments & labs	Acceptable

Describe the key process elements and technology commonly found in industrial welding and cutting processes.	Classroom lecture and assignments & labs	Acceptable
Demonstrate the skills and knowledge needed for the Certified Welding Inspector and Certified Welding Educator certifications. AWS D1.1, ASME Section IX, & API 1104	Classroom lecture and assignments & labs	Acceptable

- C. What programmatic changes have been implemented due to recent programmatic assessment activities?

More online learning has been implemented to allow students more lab time.

- D. Identify desired changes as a result of programmatic assessment that have yet to take place.

Possibly combining WELD105 (Y2) and WELD125 (Y2) into one 5 credit course to accommodate industry needs. Industry needs for shield/metal arc welding (SMAW) and semiautomatic arc welding.

VI. Students

- A. Describe full-time and part-time enrollment trends since the last program review or the past five years.

Table 5. Student Enrollment Data

Academic Year					
<u>FALL</u>	2018	2019	2020	2021	2022
Full-Time	38	24	17	23	27
Part-Time	27	17	23	12	18
Total Fall	65	53	40	35	45
<u>SPRING</u>	2018	2019	2020	2021	2022
Full-Time	19	27	26	13	21
Part-Time	36	33	26	11	18
Total Spring	55	60	52	24	39

- B. Describe enrollment trends regarding student age, gender, race, and socio-economic status since the last program review or the past five years.

Table 6. Student Demographic Data – Info Not Available

- C. Describe any concerns the program review committee has regarding: (1) any enrollment trends mentioned above or (2) other enrollment-related issues.

Covid related issues. And the need for additional lab space to accommodate enrollment. Also, not seeing many students, as industry is hiring directly from the vo-tech.

- D. Has the program instituted any methods or materials to encourage and increase applications by new students since the last program review or the past five years?

Yes X No

If yes, please describe any initiatives.

Marketing material was created to show salary difference between CTE and NCC Specialized Diploma and Associate Degree graduate. Program Manager has been visiting CTE schools explaining the new technology.

- E. Has the program instituted any methods or materials to encourage and increase the recruiting of continuing students to choose this program major or emphasis?

Yes X No

If yes, please describe any initiatives.

We have created cost comparison sheets compared to other welding schools offering a true A.A.S (Associate in Applied Science). Program maps for guided Pathways. Stackable credentials.

- F. Comment on graduation rates since the last program review or the past five years.

Graduation rates have been lower, in part due to the Covid-19 impact. Additionally, there have been a number of students who chose full-time work over the completion of their degree, with the intent for completion as a part-time student.

- G. Comment on transfer rates for students who have and who have not graduated from the program.

Since 2018, we are unaware of any transfer students.

- H. Discuss your program's engagement with and impact of new student orientation, advising, tutoring support, library services, disability support, student life, and career services.

VII. Physical and Financial Resources

- A. Comment on the availability, adequacy, and use of learning tools, such as computer software, instructional media, laboratories, studios, etc.

We have all the computer resources that students need. Many learning tools and most technology a welding lab can offer. Equipment is updated as needed through Capital and Perkin funding. I received grants for the creation of informational videos which can be used during orientations provident bank.

- B. Discuss the adequacy of (1) instructional space, (2) office space, (3) instructional supplies, and (4) equipment for the program.

We are in need for more lab space as the floor space is being utilized to capacity. Office space equipment and instructional supplies have been plentiful. Perkins funding has been instrumental in purchasing new technology to keep up with industry trends.

- C. Discuss library resources.

Library resources are available and is mentioned to students. Students don't take advantage of it, as there is nothing related to Welding.

- D. Comment on the role of marketing and public relations in supporting the program.

Marketing has been working hard on helping with enrollment such as creating new videos and internet tools to help my program with enrollment.

- E. Program costs and income. Table 7: Financial Data

	FY2022	FY2021	FY2020	FY2019	FY2018
Program Income					
Tuition	144,032	98,074	196,309	190,364	15,353
Local Reimb	29,410	18,419	33,188	32,348	2,548
Operating Reimb	69,331	45,082	80,491	75,672	5,817
Stipend Reimb	-	-	-	-	-
Total Income	242,773	161,575	309,988	298,384	23,718
Program Costs					
Direct Costs	215,553	181,987	255,834	249,354	22,642
Indirect Costs	128,848	78,780	147,205	147,718	10,952
Total Costs	344,401	260,766	403,039	397,072	33,594
FTE	26.41	18.62	38.60	38.50	3.17
Income per FTE	9,193	8,676	8,031	7,751	7,472
Cost per FTE	13,042	14,002	10,442	10,314	10,583
Inst Avg Cost per FTE	10,058	8,901	7,820	7,933	7,075
Rank	29 of 126	12 of 138	23 of 135	26 of 133	11 of 126
Income over Expense	(101,628)	(99,191)	(93,688)	(98,688)	(9,876)

1. Describe how the program is financed, including college budget (if any) and any grants received over the past five years, and outline any major expenses over the past five years.

TAACT funding for the Welding program improvement ended in 2018. The creation of stackable credentials program was primarily funded by Perkins and NCC Capital funding. The following equipment were funded by Perkins and NCC Capital:

Ultrasonic testers x 2
Phased Array tester
Positive Metal Identifier
Video Scope
Robotic Welding Cell
Co-Hog and Mill Hog Pipe Beveler
Additional Welding Machines
Semi-automatic Dual feeders

2. If possible, analyze the program's cost-effectiveness (i.e., does current/projected student enrollment cover the cost of faculty, supplies, etc. and/or are the faculty staff, space and/or facilities appropriate for the current/projected enrollment).

The welding program is considered a high-cost program due to the rising costs of metal and consumables.

3. Are you getting additional funding from grants or donors?

American Welding Society grant to purchase a new Iron Worker.

Nucor donated 18K of metal to the program.

*Provident Bank – donated video for Hartzell Hall

VIII. Human Resources

- A. Briefly describe Program Leadership and oversight.

The program is managed by the Program Manager, Dino Forst. Dino has one full-time lab assistant, Ryan Bohn and replaced by Adam Mikulski. Dino also supervises numerous adjuncts within the program.

- B. Report the numbers of full-time and part-time faculty, professional staff, and clerical staff currently associated with the program.

Table 8. Faculty Demographic Data

Rank	Last Review	Current Review
<u>Full time</u>	2	2
Part time	6	4
Clerical	2	1

1. Note any changes that have occurred in these numbers since the last program review or the previous five years.

The number of adjuncts fluctuate semester-to-semester based on student enrollment.

2. Briefly explain how these changes have affected the program.

Hiring daytime adjuncts is an ongoing issue due to individuals working a fulltime job.

- C. What is the ratio of full-time to part-time faculty? What percentage of (1) day sections, (2) traditional evening/weekend sections, (3) distance education/hybrid sections, and total sections are taught by full-time faculty. Comment on the levels of full-time, part-time faculty, and professional or clerical staff.

2 full-time to 4 part-time days.

50% full-time to 50% part-time.

- D. Faculty Expertise/Experience

1. Northampton hires faculty members who are well-credentialed (see [Appendix J](#)) and understand and embrace the open-access mission of the community college.
2. How do faculty in this program promote academic excellence through professional development, scholarship, and service?

Any adjunct with industry certifications needs to keep them current. Since most adjuncts also have a full-time job, most of their professional development is completed by their employer.

IX. Analysis of Findings

- A. Based upon the data collected in this document, discuss the strengths and weaknesses of your program. *For example: do students' progress successfully through courses; are staffing/equipment/facilities needs filled; are assessment efforts successful; etc.*

Students do progress through the program successfully, but some leave for full-time employment. Staffing could use daytime instructors, facilities needs are filled and assessments efforts are successful.

- B. Based on the data collected in this document, discuss the opportunities for improvement available to your program and the internal and external challenges your program faces. *For example: is the program in demand; are graduates employable/able to transfer; what is the future plan for this program; etc.*

Welding is in high demand. All students who graduate from SD, Certificate, and A.A.S. are employable. Day time Adjuncts have been a problem to find. Future plans are for more training for myself and adjuncts for the latest technology acquired by Northampton Community College. Education/teaching, welding specific.

X. External Review Report

Refer to [Appendix K](#) for the external/accreditor review report.

XI. Action Plan

1. **Continue to meet with industry to discuss training needs for employees who may have left before recurring a credential contracted training.**
2. **Evaluate the need for weekend**
 - a. **Adjunct Availability**
 - b. **Working Student Availability**
3. **Space needs (more than this program)**

Need to review if there is a way to utilize more space effectively.
4. **Marketing increase**

Brand awareness post Covid.
5. **On-going academic awareness.**

Appendix A: Program Description

Narrative

Northampton's Welding Technology A.A.S. degree program is designed to prepare you to enter a modern welding setting. The program offers career-specific coursework for a student wishing to complete their studies within four semesters. The program also provides course offerings that prepare you to work as a team player in a specialized manufacturing environment.

Your studies will include state-of-the-art welding equipment and principles from the American Welding Society. You will learn the marketable skills required to work effectively with other people in a manufacturing environment. We emphasize the development of professional attitudes, values, and ethics. As you progress through the program, you will gain critical thinking, priority setting, and decision-making skills needed in today's quality-oriented business environment.

Graduates of this AAS degree program may continue to a Baccalaureate program.

Features

This program prepares you for the responsibilities and challenges expected of a highly skilled welder. A welder in today's manufacturing environment is expected to possess numerous skills and abilities that allow them to be problem solvers. At Northampton you will learn a variety of different welding processes and inspection techniques that will allow you to become an asset in the job you obtain after your education is complete. The program may be completed in four semesters if taking courses during the day.

Courses for the Welding Technology A.A.S. degree include Welding Fundamentals, OSHA, Fabrication & Welding Symbols, Introduction to Pipe Welding Processes, Advanced Plate Welding Processes, and Gas Tungsten Arc & Semiautomatic Welding Processes Welding & Structural Blueprint Reading, Advanced Gas Tungsten & Semiautomatic Welding Processes, and Pipe Welding Processes II, and Introduction to Metallurgy.

This program prepares you for the responsibilities and challenges expected of a skilled trades person in the welding environment. Responsibilities of a welder include the ability to read and interpret blueprints at an advanced level, demonstrate advanced level welding principles, and to apply the knowledge of welding inspection principles. Students will gain the knowledge and skills needed to prepare for American Welding Society certification exams while achieving a competency-based degree.

Endorsed by Local Employers

Potential employers for those following this healthcare career pathway include:

- Manufacturers
- Sheet Metal Fabricators
- Construction Companies
- Gas Line Companies
- Auto Body Repair Shops
- Material Supply Sales Companies

This program can be completed in the day or evening, on a full or part-time basis.

Appendix B: Program-Level Learning Outcomes



As a graduate from one of NCC's welding programs in PA, you will be able to:

- Demonstrate an ability to work independently and collaboratively.
- Analyze and present data in an acceptable and standardized manner.
- Solve common weld ability problems.
- Demonstrate a basic framework of technical vocabulary and graphics interpretation.
- Demonstrate observational, integrative, and synthetic skills.
- Demonstrate the proper use and care of common welding equipment.
- Apply basic defect prevention philosophy and techniques to achieving weld integrity.
- Describe the key process elements and technology commonly found in industrial welding and cutting processes.
- Demonstrate the skills and knowledge needed for the Certified Welding Inspector and Certified Welding Educator certifications. AWS D1.1, ASME Section IX, & API 1104

Appendix C: Program-Level Performance Indicator Data



DNA = Data Not Available

Year	Total Students ^a	Withdrew ^b	Withdrew and transferred ^c	Retained in new major ^d	Retained in same major ^e	Graduated ^f	Graduated and Transferred ^g	% retention ^h
2022	70	DNA	DNA	DNA	DNA	DNA	DNA	DNA
2021	37	DNA	DNA	DNA	DNA	12	DNA	DNA
2020	64	DNA	DNA	DNA	DNA	DNA	DNA	DNA
2019	85	DNA	DNA	DNA	DNA	DNA	DNA	DNA
2018	81	DNA	DNA	DNA	DNA	DNA	DNA	DNA

Appendix D: Advisory Committee Minutes



Welding Advisory Board Meeting – Friday, March 3, 2023

Hosted by Dino Forst – Welding Program Manager

Time: 1:00pm-1:40pm

Northampton Community College Attendees:

Denise François-Seeney – Dean, School of Business and Industry

Gary Guidetti – Associate Dean, School of Business and Industry and School of Stem

Ken Nasatka – Director of Automotive, Industry and Manufacturing

Darlene Tice – Secretary – Automotive, Industry and Manufacturing

Company Attendees:

Chad Feilbach – Warren County Technical School/CWI/BAS. Welding Engineering

Sean Moran – General Dynamics/District Director AWS/CWI

Michael Wiswesser – Director –WTTI

After Introductions, Dino Forst started an open discussion on “What are we doing now”.

Ken joined in on the conversation and mentioned that we are looking for a two-way conversation on ways to recruit students and help seek instructors for more during the day. Input on what you see in industry, what technologies are out there, and improve our curriculum. Do we need to update articulation credits? Ken mentioned if we need to update articulation agreement, we give 12 credits and could be high as 17 if they already have certification. Anything to make it easy for your students to transfer to NCC.

- Recruitment

Chad Feilbach spoke about that he has lots of interest in the adult program. We just set up WTTI as an RTF so they can offer certain D1.1 certification tests. Can Warren County Technical students have a articulation with adult students if they have D1.1 Certification even if its only a 3 credit course? Ken asked if students would be interested in a degree program, Cert, or associate degree? Chad said only certificate course. Ken asked if they would get any AWS certifications from the adult program? Chad said yes so they can take the option of doing certain D1.1 tests. Dino spoke about how NCC is doing a similar option welding test, for Level 200 courses. Dino over oversaw it at NCC and sends it to WTTI. Ken suggested looking at what is being taught and what test they are passing and looking at articulation.

Chad said they do a 12-week course (12 classes, 3hrs. each). He would change his curriculum to align with NCC. Ken said we can look at prior learning assessment and a 3-credit elective.

Denise Francois questioned the distance from Warren County, NJ and NCC-Bethlehem, PA. Would students see a problem with a 25–30-minute commute? Chad mentioned to help with that to advertise that we are partnering with NCC on their end, that students know that. Warren County Community College does not have a Welding Department. Needs to be advertised that we partnered with NCC.

Ken suggested to meet one night with the Warren County Technical School students and discuss what they can expect salary wise when they graduate from the CTE (career and technical schools). As students go through the progression of their Specialized Diploma, Certificate or Associates Degree your salary can increase expensively as you go further into your education. Denise told Chad she is really looking forward to doing this. Chad mentioned the next adult classes will be in September, Fall 2023 for certifications, it would be best to have this conversation again during the summer. Ken asked if it is possible to see the curriculum. Chad said definitely.

- New Equipment:

Mike – Said he can offer training for Sino and Adam for Level 1 and level 2 ultrasonic testing.

- Looking for Staff

Dino asked if they know of anyone who teaches welding. Mike asked if Dino had reached out to his graduates. Dino said yes, we have an adjunct from England during this time.

Sean said he may know some guys who may be able to teach in the evening and/or weekends.

Dino asked what can we do for you (Industry)? Sean mentioned, his company is from Philadelphia, students may not want to commute but may relocate for employment. Sean said he would have someone from the company to speak to students about job possibilities. Ken asked Sean if he was involved in the Pennsylvania Pipeline Project. Sean said that he knows his company is not. He said Rose industries are involved, they are located near them and would need to speak to Dino. Ken mentioned we are one of the trainers.

- Career Fair

The Job Fair is held once a year here at Hartzell Hall. Company must have open positions not just planning. Ken will put out info regarding the Job Fair. We also have an internship program, but we do not necessarily see internships for Welding. But we never turn down an internship if it is available.

- Videos

Ken spoke about recruiting that Dino will talk to the local CTE's to the students. NCC Welding Program has 45 students (27 full time and 18 part time).

We also have a promotion video which explains the Welding Program. We have videos for all our programs here at Hartzell Hall. Videos should be available by the end of June, 2023. Also, a video has been created for CTE Next Steps. It shows how to register, how to get your articulation, apply for your FAFSA, etc. All videos have a Spanish subtitle as well.

Meeting was adjourned by Ken Nasatka at 1:40pm.

Appendix E: Curriculum Matrix

List all of the program learning outcomes for the program of study in the first column. List the program courses across the top row. Then make "I" for a learning outcome that is introduced (*addressed for the first time*), "R" for a learning outcome that is reinforced (*addressed again, but not emphasized in a major way*), and/or "M" for a learning outcome that emphasized (*addressed in a major way, emphasis toward mastery*) under each specific course.

Please note: Not every course will address every program learning outcome.

Curriculum Matrix [Program Learning Outcomes, Gen Ed Learning Outcomes] and Assessment Plan

Name of the Academic Program: **Welding Technology**

Academic School: **Business and Industry**

Completed by: **Dino Forst**

Date: **March 22, 2021**

Step one: List all of the program learning outcomes for the program of study (delete extra rows or add additional rows if necessary). For each learning outcome, identify what specific course(s) address the specific outcome (*list the courses across the top of the table*). Then make "I" for a learning outcome that is introduced (*addressed for the first time*), "R" for a learning outcome that is reinforced (*addressed again, but not emphasized in a major way*), and/or "M" for a learning outcome that emphasized (*addressed in a major way, emphasis toward mastery*) under each specific course.

Please note: Not every course will address every program learning outcome.

Step two: Identify the alignment between Gen Ed outcomes and the courses within your program of study. At the bottom of your matrix are the Gen Ed learning outcomes. For each Gen Ed learning outcome, identify what specific course(s) address and ASSESSES the specific outcome (*list the courses across the top of the table*) – focus on the program courses and important electives. Place an "A" in corresponding spot in the table. If possible, identify the specific assignment/activity in which the learning outcome is assessed.

Please note: Not every course will assess every Gen Ed learning outcomes.

Program Learning Outcomes	WELD105	WELD135	WELD110	WELD123	WELD125	WELD205	WELD224	WELD230	WELD235	WELD245	WELD255G
1. Demonstrate an ability to work independently and collaboratively	I	I	I,R	I,R	I,R	R,M	M	M	M	M	M
2. Produce welds that consistently meeting industry, American Welding Society (AWS) and pressure vessel standards.	I	I	I,R	I,R	I,R	R,M	R,M	M	M	M	M
3. Analyze and present data in an acceptable and standardized manner.	I	I	I,R	I,R	I,R	M	M	M	M	M	M
4. Solve common weldability problems.	I	I	I,R	I,R	I,R	R,M	R,M	M	M	M	M
5. Demonstrate a basic framework of technical vocabulary and graphics interpretation.	I	I	I,R	I,R	I,R	R,M	R,M	M	M	M	M
6. Demonstrate observational integrative, and synthetic skills.	I	I	I,R	I,R	I,R	R,M	R,M	M	M	M	M

Program Learning Outcomes	WELD105	WELD135	WELD110	WELD123	WELD125	WELD205	WELD224	WELD230	WELD235	WELD245	WELD255G
7. Demonstrate the proper use and care of common welding equipment.	I	I	I,R	I,R	I,R	R,M	R,M	M	M	M	M
8. Apply basic defect prevention philosophy and techniques to achieving weld integrity.	I	I	I,R	I,R	I,R	R,M	R,M	M	M	M	M
9. Describe the key process elements and technology commonly found in industrial welding and cutting processes.	I	I	I,R	I,R	I,R	R,M	R,M	M	M	M	M
10. Demonstrate the skills and knowledge needed for the Certified Welding Inspector and Certified Welding Educator certifications.									R,M		
Gen Ed (Key Abilities) Learning Outcomes	WELD105	WELD135	WELD110	WELD123	WELD125	WELD205	WELD224	WELD230	WELD235	WELD245	WELD255G
Communicate: Students will be able share their ideas powerfully and clearly.	A	A							A		A
Analyze and Solve Problems: Students will be able to see and solved the problems around them, using solid data to draw and communicate reasonable conclusions.	A	A	A	A	A	A	A	A	A	A	A
Understand Diversity: Students will be able to understand how each individual's experiences shape our society, and how societies, in turn, shape the way local and global resources are used.	A										A
Engage in Ethical Questions. Students will be	A								A		A

Appendix F: Key Abilities Program Matrix



The five Gen Ed Key Abilities help students navigate the world. In each class they take, they should expect to be challenged to develop and deepen their key abilities. After they graduate, these abilities will help them continue learning, adapt to change, and become citizens who can make wise choices and contribute to their communities.

1. **Communicate**

- *Students are able to share their ideas powerfully and clearly.*
 - *Uses appropriate, relevant, and compelling content and sources that illustrate knowledge and understanding of the topic.*
 - *Assignment is organized and understandable. Distinct intro, body, and conclusion, as appropriate for the discipline.*
 - *Language is clear and understandable. Executes assignment within conventions of a specific discipline, including source citation.*

2. **Analyze and Solve Problems**

- *Students are able see and solve the problems around them, using solid data to draw and communicate reasonable conclusions.*
 - *Identify and understand an issue, concept, or problem, any data needs, and constraints that have to be considered in order to analyze an issue or solve a problem. Students recognize multiple perspectives*
 - *Use various tools, representations, notation, etc. to help them organize data and see relationships or identify assumptions related to the issue, concept or problem*
 - *Evaluate any conclusions drawn, implications made, or plans for solving a problem, including evaluating any assumptions and any evidence gathered.*

3. **Use Technology**

- *Students are able to select and ethically use appropriate technology to create, communicate and discover.*
 - *Effectively select and use the appropriate technology applications or resources to accomplish specific goals.*
 - *Be an active and responsible participant in online communities.*
 - *Understand the legal and ethical facets of technology in a global society.*

4. **Understand Diversity**

- *Students are able to understand how each individual's experiences shape our society, and how societies, in turn, shape the way local and global resources are used.*
 - *Explain how the range of human differences shape the historical and current formation of artistic, economic, social, scientific, cultural or political institutions*
 - *Explain how individuals experience equality and inequality with a society, its institutions or its cultures*
 - *Analyze how individuals and institutions have addressed persistent global challenges, including physical resources and social values.*

5. **Engage in Ethical Questions**

- *Students are able to identify ethical choices, consider alternatives and consequences, and choose actions and choose actions keeping in mind everyone affected.*

Indicate in the table below the program courses in which a key ability is assessed ("A"-Assessed) – if possible, identify the specific assignment/activity in which the key ability is assessed. Focus on the required courses and designated program electives.

Key Abilities	WELD105	WELD135	WELD110	WELD123	WELD125	WELD205	WELD224	WELD230
Communicate - Students will be able to share their ideas powerfully and clearly	A	A						
Analyze and Solve Problems Students will be able to see and solve the problem around them, using solid data to draw and communicate reasonable conclusions	A	A	A	A	A	A	A	A
Use Technology - Students will be able to select and ethically use appropriate technology to create, communicate, and discover	A	A	A	A	A	A	A	A
Understand Diversity – Students will be able to understand how each individual's experiences shape our society, and how societies, in turn, shape the way local and global resources are used.	A							
Engage w/Ethical Questions - Students are able to identify ethical choices, consider alternatives and consequences, and choose actions and keeping in mind everyone affected.	A							

Indicate in the table below the program courses in which a key ability is assessed ("A"- Assessed) – if possible, identify the specific assignment/activity in which the key ability is assessed. Focus on the required courses and designated program electives.

Key Abilities	WELD235	WELD245	WELD255					
Communicate - Students will be able to share their ideas powerfully and clearly	A		A					
Analyze and Solve Problems Students will be able to see and solve the problem around them, using solid data to draw and communicate reasonable conclusions	A	A	A					
Use Technology - Students will be able to select and ethically use appropriate technology to create, communicate, and discover	A	A	A					
Understand Diversity – Students will be able to understand how each individual’s experiences shape our society, and how societies, in turn, shape the way local and global resources are used.			A					
Engage w/Ethical Questions - Students are able to identify ethical choices, consider alternatives and consequences, and choose actions and keeping in mind everyone affected.	A		A					

Appendix G: Program Map



	complete	Course #	Course Title	Credits	Gen Ed	Pre-requisites / Co-requisites
Semester 1	<input type="checkbox"/>	COLS101	College Success	1		
	<input type="checkbox"/>	WELD105	Introduction to Welding Processes	5		
	<input type="checkbox"/>	WELD135	Welding Fabrication & Symbols	2		PRE or CO: WELD105
	<input type="checkbox"/>	EMEC114	Mechanical Skills for the Trades	2		
	<input type="checkbox"/>	CADM117	Technical Drawings & Specifications	3		
	<input type="checkbox"/>	CISC101	Introduction to Information Technology	3	CL	
	<input type="checkbox"/>	MATH103	Technical Mathematics	3	QL	
			Total Semester Credits:	19		
Semester 2	<input type="checkbox"/>	ENGL101	English I	3	Comm	PRE: ENGL Placement Policy
	<input type="checkbox"/>	WELD110	Introduction to Pipe Welding Processes	3		PRE or CO: WELD123
	<input type="checkbox"/>	WELD123	Advanced Plate Welding Processes	5		PRE: WELD105
	<input type="checkbox"/>	WELD125	GTAW & Semiautomatic Welding Processes	5		PRE: WELD105
	<input type="checkbox"/>	OSAH101 or OSAH 102	General Industry Outreach Safety Education or Construction Industry Outreach Safety Education* (OSAH102 recommended)	1		
			Total Semester Credits:	17		
Semester 3	<input type="checkbox"/>	WELD205	Adv Gas Tungste & Semiautomatic Welding Processes	4		PRE: WELD110 and WELD125
	<input type="checkbox"/>	WELD224	Pipe Welding Processes II	3		PRE: WELD110
	<input type="checkbox"/>	WELD230	Welding & Structural Blueprint Reading	4		PRE: WELD123
	<input type="checkbox"/>	ENGL151T	English II (Technical Writing)	3	Comm	PRE: ENGL101
	<input type="checkbox"/>	PHYS152	Physical Science II	3	Science	
			Total Semester Credits:	17		
Semester 4	<input type="checkbox"/>	WELD255	Introduction to Metallurgy (WI)	3		PRE: ENGL151, MATH103, PHYS152, WELD205
	<input type="checkbox"/>	CMTH102	Introduction to Communication	3	Comm	
	<input type="checkbox"/>		AH, SIT, or SSHB Elective+	3	AH,SIT,SSHB	Depends on course selected
	<input type="checkbox"/>		AH, SIT, or SSHB Elective+	3	AH,SIT,SSHB	Depends on course selected
	<input type="checkbox"/>		Elective	3		Depends on course selected
			Total Semester Credits:	15		
			Total Degree Credits:	68		

Appendix H: Co-curricular Map



PROGRAM NAME: Welding Technology

AY 18-19

	0 - 15 credits	16 – 30 credits	31 – 45 credits	46+ credits
Get the Courses You Need	Take the following courses: COLS101 College Success (1) CISC101 Introduction to Computers (3) EMEC118 Hand and Power Tools (1) ENGG117 Technical Drawings and Specifications (3) OSAH100 Industry Outreach Safety Education (1) MATH103 Applications in Mathematics (3) WELD105 Introduction to Welding Processes (5) WELD135 Welding Fabrication and Symbols (2) <p style="text-align: right;">19 Credits</p>	Take the following courses: EMEC117 Industrial Rigging (1) ENGL101 English I (3) WELD110 Introduction to Pipe Welding Processes (3) WELD123 Advanced Plate Welding Processes (5) WELD125 GTAW and Semiautomatic Welding Processes (5) <p style="text-align: right;">17 Credits</p>	Take the following courses: ENGL151T English II (Technical Writing) (3) PHYS152 Physical Science II (3) WELD205 Adv Gas Tungsten & Semiautomatic Welding Processes (4) WELD224 Pipe Welding Processes II (3) WELD230 Welding & Structural Blueprint Reading (4) <p style="text-align: right;">17 Credits</p>	Take the following courses: CMTH102 Introduction to Communication (3) WELD255G Introduction to Metallurgy (WI) (3) AH, SIT, or SSHB General Education Elective (3) AH, SIT, or SSHB General Education Elective (3) Elective (3) (Suggested Electives: WELD 235 – Welding Inspection or WELD 245 – Plasma Arc Cutting) <p style="text-align: right;">15 Credits</p>
	<i>For details on course requirements, see the Program Map.</i>	<i>For details on course requirements, see the Program Map.</i>	<i>For details on course requirements, see the Program Map.</i>	<i>For details on course requirements, see the Program Map.</i>
	Engage with the Spartan Experience	<ul style="list-style-type: none"> - Attend at least one campus recreation event - Attend Guest Speakers - Join student club(s) - Review academic plan - Seek out community service/ service learning opportunities 	<ul style="list-style-type: none"> - Attend Guest Speakers - Discuss elective/gen ed options - Explore internships via Career Services - Seek out community service/ service learning opportunities - Tour Fowler/Fab Lab 	<ul style="list-style-type: none"> - Attend Guest Speakers - Mentor new students - Research Center for Innovation & Entrepreneurship - Seek out community service/ service learning opportunities
Get Ready for Life after Completion – Career Readiness	<ul style="list-style-type: none"> - Attend Career Service Sessions - Attend on-campus Career Fairs – Fall & Spring semesters at both Bethlehem & Monroe campuses - Complete the career readiness GPS to help select a potential Business major 	<ul style="list-style-type: none"> - Attend on-campus Career Fairs – Fall & Spring semesters at both Bethlehem & Monroe campuses - Attend sponsored company tours - Complete stackable credentials 	<ul style="list-style-type: none"> - Arrange job shadowing experience - Attend on-campus Career Fairs – Fall & Spring semesters at both Bethlehem & Monroe campuses - Complete stackable credentials - Explore Internships, externships – list potential experiences - Explore job shadowing experience – list potential employers - Research practicum sponsors (list potential employers) - Resume Development - Social media creation or update 	<ul style="list-style-type: none"> - Apply for FT jobs - Apply for graduation - Attend on-campus Career Fairs – Fall & Spring semesters at both Bethlehem & Monroe campuses - Complete practicum - Complete stackable credentials - Review and take certification testing

<p>Get Ready for Life after Completion – Transfer Readiness</p>	<ul style="list-style-type: none"> - Identify transfer colleges/universities – list transfer articulation agreements or other transfer opportunities 	<ul style="list-style-type: none"> - Contact Transfer Advisor to gain knowledge of application process - Create list of potential transfer schools 	<ul style="list-style-type: none"> - Attend college fairs/visits - View list of articulation agreements - Choose your transfer institution and gather application materials - Ask a professor(s) for an “excellent” reference 	<ul style="list-style-type: none"> - Apply for graduation - Apply for transfer to a college or university at the beginning of the semester.
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Appendix I: Assessment Plan



									MSCHE Visit	
	Fall 2020	Spring 2021	Fall 2021	Spring 2022	Fall 2022	Spring 2023	Fall 2023	Spring 2024	Fall 2024	Spring 2025
Diversity Outcome	Evaluate & Plan	Assess	Analyze	Evaluate & Plan	Assess	Analyze	Evaluate & Plan	Assess	Analyze	Evaluate & Plan
Ethical Qs Outcome		Evaluate & Plan	Assess	Analyze	Evaluate & Plan	Assess	Analyze	Evaluate & Plan	Assess	Analyze
Communicate Outcome			Evaluate & Plan	Assess	Analyze	Evaluate & Plan	Assess	Analyze	Evaluate & Plan	Assess
Analyze Outcome				Evaluate & Plan	Assess	Analyze	Evaluate & Plan	Assess	Analyze	Evaluate & Plan
Technology Outcome					Evaluate & Plan	Assess	Analyze	Evaluate & Plan	Assess	Analyze

	Program Learning Outcomes (PLOs)
AY 2020-2021	1 & 2 WELD105 WELD135 Lab /SENSE
AY 2021-2022	7&8 WELD125 WELD224 Certifications
AY 2022-2023	5 & 9 WELD245 CNC Plasma
AY 2023- 2024	4 & 10 WELD235 AWS Welding Technology
AY 2024-2025	3- WELD255G Presentations and writing assignments.
AY 2025-2026	9 -WELD230 AWS Structural code. D1.1

Appendix J: Teaching Faculty Credentials



Dino Forst: Certified Welding Educator/ Non Destructive Testing Certified

Adam Mikulski: Specialized Technology Degree Triangle Tech

Brian Prendergast: Somerset County Technology Institute Certification

Paul Licht: Pennsylvania School of Technology BS.

Daniel James: Brevard Community College A.A.S.

Jason Lewis: Lehigh Carbon Community College Certification/
Pennsylvania School of Technology A.A.S.

Edward Heimbach: Welder/ Fitter - Certified Welder

Appendix K: External Review Report



Sean P. Moran
312 Dawnwood Dr.
Landenberg, PA 19350
717-668-0214

January 20, 2023

Denise Francois-Seeney, Ph.D.
Dean, School of Business and Industry
Northampton Community College
3835 Green Pond Road
Bethlehem, PA 18020

Dear Dr. Francois-Seeney,

Let me first thank you and Dino Forst for the opportunity to conduct the audit of your Welding Technology programs. Having knowledge of your programs and seeing first-hand the work of some of your students was a benefit when conducting this audit. The time that I spend with Dino is much appreciated.

I am currently employed as a Welding Engineering Specialist with General Dynamics Electric Boat. The Electric Boat operation is the world leader in nuclear power submarine construction and employs thousands of Welding Technology students.

In addition to my employment, I'm a director for the American Welding Society, where our Foundation is focused on welding Workforce Development and Student Scholarships. Plus, the Society's technical involvement is a governing body for welding codes, specification, and education.

I used my educational background in Welding Engineering, Technology, and Education, as well as my industrial experience to evaluate the program. My involvement with scholarship committees provides me with research and knowledge of other Welding programs allowing an objective audit. Overall, I believe Northampton Community College has a very good program.

Please feel free to reach out to me to review or discuss any items in the audit or any way that I may be helpful to Northampton Community College.

Sincerely,

Sean P. Moran

Sean P. Moran

External Assessment and Audit

Welding Technology Associate in Applied Science (AAS)

Welding and Fabrication Certificate (C)

Welding Fundamentals Specialized Diploma (SD)

Northampton
Community College
Bethlehem, PA
January 2023

Sean P. Moran
Welding Engineering Specialist
General Dynamics – Electric Boat
smoran1@gdeb.com
860-865-9045

II. Assessment of the Welding Technology, Fabrication, and Fundamental programs

This evaluation is based on program information obtained from the following:

- Review of the program previous audits
- Review of material available on-line and obtained on-site
- Review of course outline and content of material used
- Interviews and visit with Mr. Dino Forst
- Site visit and tours of classroom and lab areas
- Experience as an Adjunct instructor of many of the program courses
- Industry experience in large scale manufacturing applications

III. Scope of Audit

Northampton Community College (NCC) Welding Technology Associate in Applied Science, Welding and Fabrication Certificate and Welding Fundamental Specialize Diploma programs are designed to meet the needs of the today's developing welding industry. The course study and practicum experience provides students with the knowledge and skill sets to enter a career in the Welding industry.

The primary focus of the audit was to view and obtain any information that could be helpful for the improving of the curriculum. With over forty years in the welding industry, working with tools in the field, developing training and welder qualification programs, and oversight management of welding operations, my objective was to understand if the course program and material used would provide the welding industry with the entry level candidate who would be successful in a welding career.

IV. Overall Evaluation

NCC's program offers a comprehensive education useful in the field by offering the content that give the student knowledge in the fundamental skills needed in the in Welding industry. The practicum provides them with the insight into how these skills are applied in everyday applications. The follow is some of my evaluations.

- The instructors working in the program are experience professionals who have applied the skills successfully in the industry. The program course provides students with knowledge of the skills they will use daily.
- The welding program uses a text book that has been involved with welding education for past 30 years. The author incorporates a vast array of welding principles and practices that are vital to student's success.
- Upon entering the program, candidates should have a basic knowledge of math skills, linear dimensions, volumes, and basic geometry. In addition, basic knowledge and use of computer skills would be beneficial

- Providing student with a path to the Pennsylvania College of Technology's Welding Engineering Technology Bachelor of Science degree is an enormous benefit to students. The Penn College program is known for preparing students with the knowledge and skills they need to immediately enter and excel in the welding industry.
- Availability of some of the latest technologies of equipment is extremely important for the instruction since the industry is using cutting edge technology to increase production and provide the best of quality to their products.
- The formation of the advisory committee is also a positive development and gives the administration information on the current skills students will need for the rapidly growing industry.

V. Suggestions

1. Direct marketing of the program to the local welding industry as a way to inform the valued employers to become more informed and involved with the NCC welding program.
2. Form student membership relationships with industry association such as American Welding Society (AWS). American Society of Non-Destructive Testing (ASNT) and American Society of Materials (ASM). Most of these associations offer scholarships that could benefit the student's cost to tuition.
3. Further enrich the instructional faculty development and awareness of state of the art technology involved in the welding industry, this should include not only the hardware but also the direction of workmanship.
4. Re-evaluate the use of space in the welding lab work space. While there is impressive use of space for modern equipment. The positioning and storage of items should be more accommodating for addition of new equipment and operation of the open work areas.
5. Forge deeper working relationships the leading technology providers in the industry. They may be willing to provide the classroom with the insight, tools, and technology the welding industry is currently using. Vendors such as
 - a. ITW Welding – Manufactures of welding equipment and consumables
 - b. Hypertherm – Manufacture of plasma cutting equipment
 - c. WeldEye - Software solution for managing welding production
 - d. WeldSpec- Welding procedure software
6. It is typical that most welding technology degree, certificate, and diploma graduates find their position after working in the industry. Promoting welding technologies as a rewarding career path to high school students would benefit not only the student but the industry.

VI. Conclusion

The NCC program is in good health and offers students with a pathway to a rewarding and successful career. The welding industry is struggling to find knowledgeable and skilled candidates. All three of the welding program are successfully training students to fulfill these positions.

Since our industry has and always will be developing and expanding, it is important for NCC to stay connected to these developments so that the degree, certificate, and diploma courses can provide the student with the principles and practices necessary for their success. The continuing to forge and progress industry relationships and act upon their input is essential to the program.

Sean P. Moran

Signature

January 20, 2023

Date