

Pathway to BS degree Program for Construction Trade Professionals at Purdue University Northwest

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Abstract

A new pathway program, leading to a baccalaureate degree, has been established at Purdue University Northwest (PNW) for field professionals from the construction trades. These field professionals have received their associate degrees from Ivy Tech Community Colleges (ITCC) in Indiana through a partnership between construction industries in Northwest Indiana and ITCC. This pathway program was proposed, initiated, and supported by leadership in construction industries and has been a collaborative effort between the construction industry, PNW, ITCC, and Construction Advancement Foundation (CAF). The proposal required modification of existing Bachelor of Science degree program in Organizational Leadership and Supervision to accommodate transfer credits from AS degree to BS degree through selective courses in the program's plan of study. All stakeholders were involved in the curriculum revision process and creation of this pathway program. A formal articulation agreement was executed for a seamless transfer of credits from the ITCC courses taken by trade union professionals. This pathway program is available for the following ten trade union professionals with AS degrees: carpenters, bricklayers, iron workers, millwright, telecommunication technicians, painters, plumbers, sheet metal workers, boiler makers and electricians. Through this program, 48 credit hours are guaranteed to be transferred to BS plan of study, which requires a total of 120 credit hours for graduation. After a request from the construction industry for such a program, discussions, planning, and design of curriculum continued throughout 2020. The first cohort of 16 students, supported by industry, registered, and started this program in spring semester of 2021. The plan of study and course offerings are designed for participants to complete the degree in six semesters, after their associate degree and while working. This paper describes the successful initiation, development, and implementation of the pathway program for trade union members leading to the BS degree in Organizational Leadership and Supervision from Purdue University Northwest.

Introduction

Trade unions in Northwest Indiana offer associate degree programs in collaboration with ITCC in Indiana. Many have graduated from this job-ready training program and are employed in the construction industry. The Construction Advancement Foundation (CAF) at Portage, Indiana, took initiatives to collaborate with Purdue University Northwest and local construction industry to establish a pathway program for the construction trade personals. In this regard, CAF

presented a proposal to PNW during January 2020. This initiative was developed to provide an opportunity for those individuals, who had many years of experience in the field but without a bachelor's degree, to advance in their respective careers. Based on the industry proposal presented to the PNW, the Construction Science and Organizational Leadership (CSOL) Department took initiatives to develop a suitable program for construction industry professionals. This pathway program provides a pathway to construction professionals that accepts transfer course credits seamlessly from their AS degrees and allows them to graduate with BS degree program by taking evening courses in five to six semesters.

OLS Pathway Program for Construction Professionals

Many institutions have implemented pathway programs that leads to either AS or BS degrees. In Florida Polk State College partnered with industry to create an apprenticeship program that leads to AS degrees [1]. One study indicated that, “community colleges must make their many different types of credentials understandable, and employers must signal clearly what credentials they’re seeking – not only degrees but certificates, certifications, licenses, badges, and **noncredit credentials that transition** to credit pathways” [2]. Once community colleges provide pathways to AS degrees with such transition, an articulation between community colleges and 4-year institution will provide pathways for BS degrees. In total, 10 trade union ITCC associate degrees were mapped to the Organizational Leadership and Supervision (OLS) program at PNW by carefully considering the course materials of individual courses to equivalent PNW courses. The existing OLS program was chosen because it is designed for working professionals. Ten trade union construction professionals with AS degrees, namely carpenters, bricklayers, iron workers, millwright, telecommunication technicians, painters, plumbers, sheet metal workers, boiler makers, and electricians, were considered for this initiative. Each trade union AS degree is unique in nature and CSOL faculty created mapping for each one of them separately. Initial proposals were discussed in a joint meeting with ITCC officials, CAF, and PNW faculty. After this preliminary effort, the suggestions from different participants were carefully considered and revisions were made. After few rounds of discussions, the course transfer credits and pathway plans were finalized. An example curriculum for the pathway program is presented in Fig. 1. Revised curriculum for the OLS pathway program was also approved by the PNW Faculty Senate during April 2020.

In the pathway program, OLS program was revised to accommodate construction courses proposed by CAF (Fig. 1). One important reason for expedition of this proposal was that both Construction Engineering and Management Technology and Organizational Leadership and Supervision programs are housed in the same department. Therefore, it was easy for faculty to work closely to make sure that this OLS degree accommodates the needs of construction industry as few electives in this program were substituted by construction management courses, addressing the need for construction superintendents. Following are certain unique features of this program:

- In total, 48 credit hours of courses from the ITCC AS degree were transferred to the OLS pathway program for construction professionals. Students take 72 credit hours from PNW.

- PNW also committed to offer the classes for these students in the CAF building, even using qualified CAF employees as limited time lecturers.
- Courses were offered in a hybrid format through Zoom during Thursdays and Fridays after 3 pm as the students work full time in the construction field all over the state.
- Course load per semester is limited to a maximum of three courses.
- For initial two semesters, PNW committed to offer the course sections exclusively for pathway students as a cohort. This allowed faculty to gauge any special need or adjustment in teaching methods for these non-traditional students.


|  COLLEGE OF TECHNOLOGY | | | | | | | | | | | | | | | |
|--|----|----|---|--------------------|----|----|---|-------------------|----|----|--|----------|----|----|--|
| Pathway Program - Project Leadership | | | | | | | | | | | | | | | |
| Department of Construction Science and Organizational Leadership <i>Articulation Plan with Building Trades Apprenticeship - Carpenter</i> <i>(Preliminary - February 2026)</i> | | | | | | | | | | | | | | | |
| Bachelor of Science Degree | | | | | | | | | | | | | | | |
| SEM | GR | CR | SEMESTER 1 | SEM | GR | CR | SEMESTER 2 | SEM | GR | CR | SEMESTER 3 | SEM | GR | CR | SEMESTER 4 |
| | | | AENA 101 3 ENGL 10400 English Composition | | | | 3 ENGL 22000 Technical Report Writing | | | | 3 ECON 21000 Principles of Economics OLS 30000 Safety & Health for Eng Tech/ CEMT 34101 Construct Operations | ACRP 102 | | | 3 Open Elective/ Professional Selective 2 |
| | | | 3 COM 11400 Fund. Of Speech Comm. | | | | 3 PSY 12000 Elementary Psychology | | | | 3 SOC 38200 Intro to Stats in Soc OLS 37500 Training Methods/ ACRP 101 3 Professional Selective 1 | ACRP 110 | | | 3 OLS 35000 Creativity in Business & Indus |
| | | | AMMA 104, 105, 106 3 MA 14700 Algebra & Trig. For Tech. I | AMMA 101, 102, 103 | | | 3 STAT 13000 Stat. & Contemporary Life | | | | 3 CIS 20400 Intro to Computer-Based Syst. | | | | 3 Open Elective Lab Science Elective/ CEMT 34201 Const Costs & Bidding |
| | | | IYTT05 & AHSR101 3 OLS 16300 Fund. Of Self Leadership | | | | ACRP 104, 105 3 OLS 13100 Intro to Safety & Health Mgmt | ASCA 111 | | | 3 Lab Science Elective | | | | 3 OLS 24200 Fundamentals of Ergonomics |
| | | | ACQA 101 3 OLS 25200 Human Relations in Org. | | | | | | | | | | | | |
| | | | 15 Credits | | | | 15 Credits | | | | 15 Credits | | | | 15 Credits |
| SEM | GR | CR | SEMESTER 5 | SEM | GR | CR | SEMESTER 6 | SEM | GR | CR | SEMESTER 7 | SEM | GR | CR | SEMESTER 8 |
| | | | ACRP 122 3 Open Elective OLS 33400 Fire Protection Systems/ ACRP 123 3 Professional Selective 3 | | | | 3 PHIL 32400 Ethics for the Professions | | | | 3 OLS 47400 Conference Leadership Train. OLS 33700 Intro to Emergency Mgmt/ CEMT 45000 Construction Scheduling | | | | 3 OLS 46800 Personnel Law & Safety Legi Open Elective/ CEMT 34000 Intro to Constr Safety |
| | | | 3 OLS 33600 Fund of Risk Assess. Mgmt | | | | 3 OLS 38400 Leadership Process Ols 37600 Human Resource Issues/ CEMT 44500 Construction Management OLS 34100 Fund of Environmental Health/ CEMT 34400 Construction Inspection | ACRP 125 | | | 3 Professional Selective 5 OLS 41500 Intro to Environmental Mgmt/ ACRP 126 3 Open Elective Communications | | | | 2 OLS 49700 Senior Project |
| | | | ACRP 201, 202, 203 3 OLS 45400 Gender & Diversity Mgmt OLS 42100 Psychology of Safety/ Professional Selective 4 | | | | 3 OLS 38600 Ldrshp for Org Change & Innov | ACRP 204, 205, 20 | | | 3 Selective/ 1 OLS/CEMT 49300 Senior Project - Phase | | | | 3 ENGL 42000 Business Writing 3 OLS 43000 Safety & Health Prgrm Mgmt |
| | | | 15 Credits | | | | 15 Credits | | | | 16 Credits | | | | 14 Credits |
| | | | | | | | | | | | | | | | 120 Credits Total |
| Note: 48 PNW Credit Hours Transferred from IvTech <i>Fonts in red: Construction courses for pathway students</i> | | | | | | | | | | | | | | | |

Fig. 1. Pathway program for carpenter trade union program with ITCC; yellow highlighted courses are transferred from AS degrees.

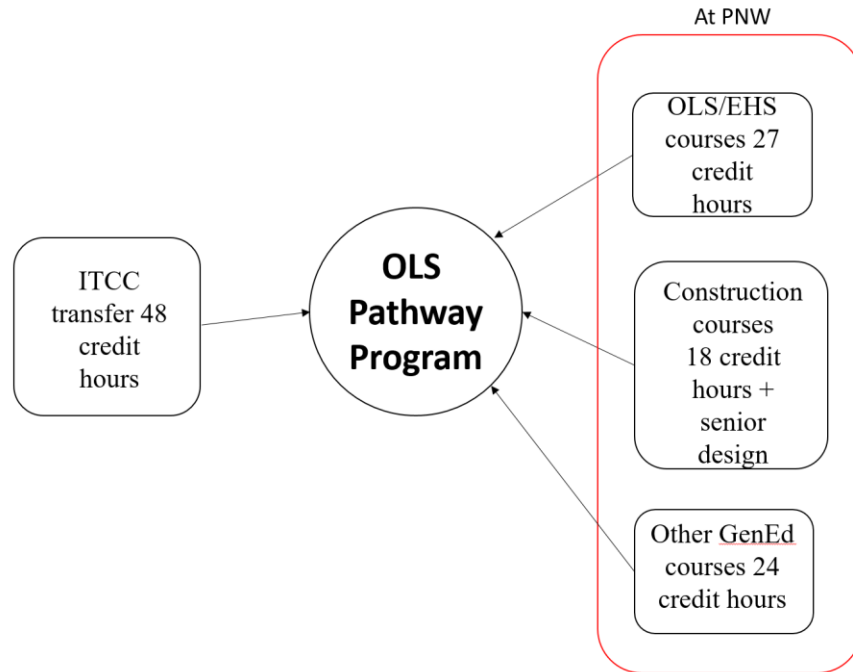


Fig. 2. OLS Pathway program scheme for construction professionals.

Implementation

During fall 2020, three students joined this pathway program from a local construction company. But all the students withdrew from the program due to difficulties related to pandemic, PNW's learning management system (LMS), Brightspace. They were also concerned about taking the class with traditional students. Based on that input, the CSOL Department decided to offer an introductory workshop for the candidates who applied for the pathway program; it provided an introduction to LMS and arranged help session for a seamless transition to classroom learning.

Sixteen students joined the program in spring 2021 and classes were offered at CAF location. Furthermore, to make the transition to the school smooth, it was decided that, during their first semester, students take only two courses and the number of courses per semester increase as they progress with the program. In fall 2021, two additional students entered the program. Since students take six to nine credit hours per semester, the pathway students take two classes during summer session too.

PNW is continuously working with CAF and ITCC to communicate about this great opportunity with other unions and for a broader audience so that this pathway program becomes sustainable in the long run. To further jump start the program, PNW also provides reimbursement of the application fee and transcript fees to the students after they complete a semester at PNW successfully. PNW is also trying to establish scholarships for the pathway students through industrial partners who will benefit from graduates of this program.

Feedback from participants

In general, the pathway students are very satisfied with the program plan. They appreciate the hybrid format in which the courses are provided to them. It fits well with their work schedule.

References

1. E. Roe; E. Helms, B. Lachford, and R. Johnson, “Creation of a multi skill manufacturing apprenticeship program with articulated pathways into engineering technology,” *ASEE Annual Conference Proceedings*, virtual, June 2020.
2. T. Jacoby, “Community college career education: Scaling a new approach,” July 2019. [Online]. Available: <https://vtechworks.lib.vt.edu/bitstream/handle/10919/97745/CommunityCollegeEducation.pdf>

Biographies

CHANDRAMOULI VISWANATHAN CHANDRAMOULI, PhD, PE, is presently serving as the professor and chair, Construction Science and Organizational Leadership Department at Purdue University Northwest. He has 24 years of teaching and research experience as well as seven years of field engineering experience. His research area is Water Resources Engineering with a focus on reservoir operation studies, flood modeling, climate change impacts, and water quality modeling. He was awarded the Outstanding Teacher Award for his contributions during 2016 for Purdue University, Calumet.

SHOJI NAKAYAMA, PhD, is an associate professor of Organizational Leadership and Supervision in the Department of Construction Science and Organizational Leadership at Purdue University Northwest. In this position, he teaches safety- and health-related courses, as well as improving the environmental health and safety curriculum through industrial advisory committees. He worked as an environmental, health, and safety system analyst in the telecommunication industry prior to his current position. His research interests include human performance development/improvement, safety performance analysis, integration of safety principles into lean manufacturing, and development of effective online training modules.

MOHAMMAD ZAHRAEE, associate dean for the College of Technology, has chaired two departments for over 11 years and has served as associate dean and interim dean of College of Technology. He has been PI or co-PI for contracts and grants valued over \$5 million. He consults with other institutions on program assessment and ABET accreditation.

NIAZ LATIF is the dean of the College of Technology at Purdue University Northwest (PNW) and also serves as the executive director of the Commercialization and Manufacturing Excellence Center at PNW. He has been principal investigator for several federal grants related to advanced manufacturing workforce development, USDOL, NSF, USEDA. He is a commissioner of ABET.