



2025 Workforce Innovation Education Fund

August 1, 2025

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TO: David Krebsbach, Vice Chancellor for Administrative Affairs/Chief Financial Officer,
North Dakota University System

FROM: DJ Campbell, SBHE Member and WEIF Chair

SUBJECT: Approval of Funding Recommended by the Workforce Innovation Education Fund
Committee on August 1, 2025

DATE: August 1, 2025

In accordance with N.D.C.C. 15-10-75, the document on the following page details the projects with associated funding amounts approved by the Workforce Innovation Education Fund Committee on August 1, 2025. The applications and supporting information are available upon request for the respective approved projects.

A handwritten signature in blue ink that reads "Donald J. Campbell".

Donald "DJ" Campbell, SBHE Member and WEIF Chair

Workforce Education Innovation Fund Summary of Applications

Institution	Project Title	Brief Description	Amount Awarded
BSC	Nurse Forward ND: Advancing Education, Building Capacity	ND faces a growing nursing shortage as current nurses retire or change careers. To address this, BSC is expanding its nursing programs, having recently gained approval for ten additional seats, but must hire an extra faculty member to maintain proper student-to-faculty ratios.	\$ 110,904
BSC	Expanding Behavioral Health to Meet ND's Workforce Needs through a BAS in Behavioral Science	BSC proposes the launch of a BAS in Behavioral Health to address ND's shortage of behavioral health professionals. Starting as early as Fall 2025, the program will prepare workforce-ready graduates to support local healthcare, education, and social services.	\$ 251,795
BSC	Workforce Ready: A Construction Management Education Initiative	BSC is seeking funding to launch a 60-credit AAS in Construction Management by Fall 2025, preparing students for leadership roles in various construction sectors. The program combines hands-on training with industry tools and safety standards, producing workforce-ready graduates in just two years.	\$ 222,635
BSC	Smart Systems, Skilled Hands: Advancing Technical Education through Mechatronics at BSC	BSC seeks start-up funding to launch a Mechatronics Engineering Technology program that meets the workforce demands of central and western ND. The program will prepare students for careers in smart technologies and automation through an industry-aligned curriculum and experienced faculty.	\$ 216,288
BSC	Launching a Higher Ed Solution to the Electrician Workforce Shortage	BSC proposes a new Electrician Technician AAS degree to address the growing demand for skilled electricians in various sectors. The four-semester, hands-on program will focus on both traditional electrical skills and modern automation technologies, enrolling up to 18 students per year.	\$ 287,011
BSC	Reconceptualizing a Sustainable Educator Pipeline to Respond to the Paraprofessional and Teacher Shortage Crisis by Offering a BAS in Foundations of Teaching	This project will create ND's first sustainable para-to-teacher pipeline through a dual-degree program, enabling students to earn two bachelor's degrees in four years while progressing from teacher aide to fully licensed teacher. In partnership with NDUS institutions, the initiative addresses urgent educator shortages by combining early employment, targeted training, and cross-campus collaboration.	\$ 160,805
			\$ 1,249,438
DCB	Transition of Paramedic Technology Program to Dakota College at Bottineau to Support Regional EMS Workforce Needs	DCB has collaborated with Trinity Health to offer a Paramedic Technology AAS degree and certificate program through a contractual arrangement based in Minot. This shift ensures long-term sustainability, strengthens EMS workforce training, and maintains Trinity Health as a collaborative partner.	\$ 438,988
DCB	Expanding Healthcare Training in Minot: Developing a Medical Laboratory Technician AAS Program	This project will launch a Medical Laboratory Technician AAS program at Trinity Health Center West in Minot, in partnership with Trinity Health and Minot State University. Designed to meet regional healthcare workforce needs, the program offers hands-on training and serves as a pathway to a bachelor's degree in Medical Laboratory Science.	\$ 408,438
DCB	Developing a Medical Surgical Technology Program in Minot to Address Regional Healthcare Needs	Trinity Health and DCB are collaborating to establish a Medical Surgical Technology AAS and certificate program at Trinity Health Center West in Minot to address local workforce needs. This new program will provide hands-on training to meet the growing demand for skilled technologists in the region.	\$ 561,238
			\$ 1,408,664
DSU	Master of Science in Athletic Training at Dickinson State University	DSU plans to launch an M.S. in Athletic Training program to address the shortage of certified trainers in North Dakota, especially in rural areas, aiming to graduate 20-30 students annually. The program, supported by partnerships for clinical training, seeks funding for faculty, equipment, and facilities, launching within a new School of Health Sciences.	\$ 600,000

Workforce Education Innovation Fund Summary of Applications

Institution	Project Title	Brief Description	Amount Awarded
DSU	Bachelor of Science in Cybersecurity and Artificial Intelligence at Dickinson State University	DSU proposes a B.S. in Cybersecurity and Artificial Intelligence to address workforce shortages by providing hands-on training in ethical hacking, AI programming, and threat detection. The program will feature advanced labs and industry partnerships.	\$ 400,000
			\$ 1,000,000
LRSC	LRSC Launch of Allied Health Apprenticeships Program utilizing Mobility Modalities	LRSC proposes four new allied health apprenticeship programs in partnership with Altru Health System, offering certificates and associate degrees in Surgical Technology, Lab Technician, Respiratory Therapy, and Ultrasound/Sonography, with plans to explore Radiology Technology. These programs combine employer-sponsored clinical training with academic coursework, include articulation agreements for four-year degrees, and aim to expand youth apprenticeships in collaboration with local schools, supporting workforce development and employer-staff retention.	\$ 1,000,000
			\$ 1,000,000
MaSU	New Program Development: Healthcare Informatics	This project proposes a B.S in Healthcare Informatics to meet regional workforce demand, leveraging existing nursing faculty and resources. The hybrid program will offer flexible, mostly online coursework with some in-person sessions, designed to serve rural students and adult learners.	\$ 331,250
			\$ 331,250
MiSU	Minot State University Master of Science in Substance Use and Mental Health Disorders Counseling Program	MiSU is developing an MS in Substance Use and Mental Health Disorders Counseling program to address workforce shortages in rural and underserved ND communities. The dual-licensure program combines real-world training, diverse faculty expertise, and innovative tools like virtual reality to prepare students for immediate employment in a variety of community settings.	\$ 327,663
MiSU	Meeting Workforce Needs in Western North Dakota: Innovation Engineering at Minot State University	MiSU proposes an Innovation Engineering degree program to meet regional industry needs for skilled engineering graduates in sectors like energy, agriculture, and defense. The flexible curriculum starts with a two-year foundational A.A. and progresses to a four-year B.S., integrating hands-on learning, industry partnerships, AI-powered student support, and workforce development efforts to retain and prepare students for the dynamic local economy.	\$ 796,413
MiSU	Building Clinical Readiness: Simulation Director, Support Staffing, and Technology for ND Nursing Education	The Building Clinical Readiness project will create a state-of-the-art Simulation Center in Minot, led by MiSU and DCB, to enhance healthcare workforce training through immersive, high-fidelity simulation. Located in the future Regional Health Sciences Institute, the center will support multiple institutions and help address critical healthcare workforce shortages across the region.	\$ 280,788
			\$ 1,404,864
NDSCS	L.I.V.E. FIRE – Learning In a Versatile Environment – Fire Instruction, Readiness, and Education	The NDSCS Fire Science Program proposes the development of a modular fire training facility constructed from repurposed shipping containers. This facility will serve as a permanent, on-campus structure designed to provide realistic, scenario-based fire and rescue training aligned with NFPA standards. The project will enhance hands-on learning opportunities for Fire Science students and regional fire department partners.	\$ 200,000

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Institution	Project Title	Brief Description	Amount Awarded
NDSCS	AMT Program Initiative	NDSCS is launching an certified Aviation Maintenance Technology program at its Fargo campus in August 2025. Offering both a certificate and associate degree, the program prepares students for FAA certification in General, Airframe, and Powerplant sections, leading to careers in aviation maintenance.	\$ 1,000,000
			\$ 1,200,000
VCSU	Artificial Intelligence (AI) Institute for Teaching and Learning	VCSU proposes establishing ND’s premier AI Institute for Teaching and Learning to lead AI integration in K-12 and higher education. The institute will focus on teacher training, career-ready graduates, personalized learning, inclusive AI access, and responsible deployment, positioning VCSU as a statewide model for AI-driven education.	\$ 1,000,000
			\$ 1,000,000
WSC	WSC Healthcare Training Programs	WSC is launching a major healthcare training initiative to address critical workforce shortages in western ND, driven by a growing population and aging, transient workforce. With legislative funding for a new Healthcare Training Facility, WSC seeks an additional \$1.5 million to fully implement 15 new healthcare programs that will meet current and future regional demands.	\$ 1,405,784
			\$ 1,405,784
			\$ 10,000,000



2025-2027 Application for Workforce Education Innovation Grant Funds

Application Number

8

Institution

Bismarck State College

Applicant Name.

Dr. Daniel Leingang

Applicant Title.

Interim President

Applicant Department.

Bismarck State College

Project Title.

Nurse Forward ND: Advancing Education, Building Capacity

Briefly describe the proposed project.

There is a shortage of nurses in North Dakota, and this shortage will continue to grow as the current nurses retire or make employment changes. Bismarck State College has two projects: a practical nursing certificate and an associate degree registered nurse project. Bismarck State College has experienced several years of nursing applications for both projects, being more than double the North Dakota Board of Nursing-approved seat count. Last year, BSC applied for ten additional seats and received approval in late August 2024. To accept additional students and remain within appropriate ratios of faculty to students, BSC must employ an additional faculty member.

Does the proposal meet the statutory guidance of N.D.C.C. 15-10-75?

Yes

Indicate which statutory objective this proposal will advance (as required by N.D.C.C. 15-10-75).

Equipment & technology purchases; Hiring and training new and existing instructors

Briefly describe how the funds will advance the objectives.

BSC will hire an additional nursing faculty member to allow for additional sections of courses to accommodate increased seat counts. This faculty member will have a nine month plus 12-week contract to support the fall clinicals for both ADN and LPN projects through the summer LPN project. To ensure the new faculty member is fully equipped to deliver high-quality instruction and clinical supervision, the funds will also provide necessary technology resources, including a laptop, docking station, monitor, and required software.

When will the proposed project be ready to admit students?

Fall 2025

Amount of funding requested.

\$110,904

What other sources of funding or resources support the proposed project?

Bismarck State College has committed institutional funds to initiate and support the development of the project, including the utilization of existing staff resources. Tuition revenue will also contribute to sustaining the project's growth and operations. The college has a strong track record of securing healthcare-related grants, which is expected to continue supporting future project enhancements. Additionally, private industry partners have historically contributed through equipment donations and sponsorships, and similar in-kind and financial support is anticipated moving forward.

Which identified workforce development need will this project address?

This project directly addresses the critical nursing shortage facing North Dakota and the surrounding region. During the exploration of the need for a Bachelor of Applied Science in Nursing (BASN) degree, Bismarck State College engaged with numerous healthcare partners, including CHI St. Alexius, Sanford Health, Gaia Home, the North Dakota Hospital Association, Vibra Health, and others. These stakeholders consistently emphasized the urgent demand for qualified nursing professionals. The need was so significant that many of these partners provided letters of support, collectively indicating a projected need to hire nearly 1,000 nurses over the next few years.

What are the project's metrics for success? How will these metrics be achieved?

Success will be measured by hiring a new nursing faculty member, equipping them with essential technology, and securing approval from the North Dakota Board of Nursing to expand enrollment by 10 seats. Full enrollment of these additional seats will demonstrate project growth and demand.

How does the project support student retention in North Dakota to meet the needs of local industries?

In 2024-2025, 95% of ADN graduates found employment in North Dakota, with only 2 seeking employment outside of ND. In 2023-2024, only 16 of the 48 LPN students did not choose to continue to the ADN program, and 100% of those 16 were employed in North Dakota.

How are the students supported by this project prepared to enter the workforce with minimal additional on-the-job training?

Students completing either program must take a board of registry exam and then seek licensure through a state board. BSC had a 100% pass rate on the LPN NCLEX for the 2023-2024 Academic Year and at 97.78% pass rate on the RN NCLEX for the 2023-2024 academic year.

Are there private sector partners in creating/offering the project? If so, how do they contribute?

Several private sector partners play a vital role in supporting the nursing program by offering tuition reimbursement and scholarships. These contributions help students offset educational costs, making healthcare training more accessible and fostering a stronger, more prepared workforce.

Is this project offered in partnership with another NDUS institution? If so, describe the partner's contributions.

Bismarck State College nursing program partners with other NDUS institutions through the Dakota Nursing Program consortium. BSC collaborates with three other colleges to share instructors and resources, making it possible to deliver a high-quality nursing program that would otherwise be cost-prohibitive without this innovative partnership.

Does this project support a program already approved per SBHE policies and NDUS procedures?

Yes

Describe how the project is novel and innovative.

Bismarck State College's BS in nursing expands access to nursing education, particularly for rural students, through an online delivery model. Many BSC graduates cite cost and the burden of transferring to a university as barriers to continuing their education. By offering a seamless, affordable² pathway, this program supports over 40 annual associate nursing graduates and addresses a critical

workforce shortage, with healthcare facilities projecting a need for nearly 1,000 nurses in the coming years.

How will the project be sustained after WEIF Grant funding is expended?

After WEIF Grant Funding is expended, the project will be sustained through a combination of institutional funding, tuition revenue, and continued support from industry partners. Bismarck State College will integrate the program into its long-term financial planning to ensure stability. Tuition from enrolled students will help offset operational costs, while healthcare partners will continue to provide clinical placements and tuition assistance. Additionally, the college will actively pursue new grant opportunities at the state and federal levels to support program growth and innovation, ensuring the project remains responsive to workforce needs and sustainable over time.

How will the project adapt over time to changing workforce needs and technological changes?

The project will continuously adapt to evolving workforce demands and technological advancements through active engagement with the Business and Industry Leadership Team, the North Dakota Nursing Consortium, and compliance with Board of Nursing regulations. These partnerships ensure that curriculum updates reflect current industry standards, emerging healthcare technologies, and best practices. Bismarck State College regularly reviews and revises its programming based on feedback from employers and regulatory bodies, allowing the program to remain relevant, innovative, and aligned with the needs of the healthcare sector.

Nursing Grant Budget		Year 1	Year 2
Salaries (including Fringe)			
Nursing Faculty			\$ 108,404.00
Total Salaries	\$	-	\$ 108,404.00
Curriculum Development			
Curriculum Development X Credits/year			
Total Curriculum Development	\$	-	\$ -
Total Personnel Budget	\$	-	\$ 108,404.00
Facility Modification & Equipment Install			
			\$ -
Total Facility & Equipment Install	\$	-	\$ -
Equipment & Technology (>\$10,000)			
Faculty Laptop, docking station, monitor, software	\$	2,500.00	
Total Equipment	\$	2,500.00	\$ -
Total Direct Cost Budget	\$	2,500.00	\$ 108,404.00
Total Dental Grant Budget Requested	\$		110,904.00

Year 2 is formulated with a 3% increase for estimation.

Curriculum Development is \$1,000 per credit plus taxes (7.739%) = \$1,077.39.

Personnel = Salary & Fringe + Curriculum Development Costs

\$ 110,904.00



2025-2027 Application for Workforce Education Innovation Grant Funds

Application Number

9

Institution

Bismarck State College

Applicant Name.

Dr. Daniel Leingang

Applicant Title.

Interim President

Applicant Department.

Bismarck State College

Project Title.

Expanding Behavioral Health Education to Meet North Dakota's Workforce Needs Through a BAS in Behavioral Health

Briefly describe the proposed project.

This project proposes the development and launch of a Bachelor of Applied Science (BAS) in Behavioral Health at Bismarck State College (BSC). The initiative aims to address the critical shortage of behavioral health professionals in North Dakota by creating a locally accessible, workforce-aligned degree program. The program can begin to enroll students as early as Fall 2025, ultimately producing graduates who are prepared to enter the workforce with minimal additional training, directly supporting local healthcare, education, and social service sectors.

Does the proposal meet the statutory guidance of N.D.C.C. 15-10-75?

Yes

Indicate which statutory objective this proposal will advance (as required by N.D.C.C. 15-10-75).

Curriculum Development; Equipment & technology purchases; Hiring and training new and existing instructors

Briefly describe how the funds will advance the objectives.

BSC requests funding to support curriculum development and technology to help defer initial start-up costs for the new AAS in Behavioral Health program. These funds will allow BSC to hire a qualified instructor for 2 years, after which BSC will pay the salary and benefits. These funds will also support designing and building a comprehensive, evidence-based curriculum that includes core behavioral health competencies, ethics, cultural competence, and applied fieldwork experiences. Curriculum will include 27 credits in Year 1 and 24 credits in Year 2.

To support instruction and student engagement, multiple sets of schizophrenia auditory simulators will be purchased to help students better understand the lived experience of individuals with mental illness – an important component of this degree and the career students may pursue.

In addition to curriculum development and simulation tools, funding will also support the purchase of a 5 faculty laptop, docking station, monitor, and necessary software to facilitate instruction and course

design. These resources will ensure the program launches with the tools, content, and instructional capacity needed to prepare students for meaningful, workforce-ready careers in behavioral health.

When will the proposed project be ready to admit students?

Fall 2025

Amount of funding requested.

\$251,795

What other sources of funding or resources support the proposed project?

Bismarck State College has committed institutional funding to launch and support the Behavioral Health program. Beyond that, the college is building strong partnerships with local healthcare providers, mental health organizations, and community agencies. These partners will be an excellent source for advising on curriculum development, mentorship opportunities, and even equipment and materials. Their involvement reflects a shared urgency to address the growing need for behavioral health professionals in central and western North Dakota. As the program becomes established, tuition revenue will help sustain its operations. BSC is also actively pursuing additional grants to broaden the program's reach and strengthen its long-term impact.

Which identified workforce development need will this project address?

This project directly addresses a critical workforce development need in the behavioral health and human services sectors, both in North Dakota and nationally. According to LightCast data from January 2025, North Dakota is projected to have approximately 200 annual job openings in human service-related fields, with a projected job growth of 14.9% over the next nine years. Nationally, the outlook is even more significant, with 82,288 annual projected openings and a 24.8% growth rate over the same period.

The urgency of this program is underscored by the rising demand for mental health services and the growing shortage of trained professionals. Support for the program has been expressed by YouthWorks, the North Dakota Department of Health and Human Services, and the Department of Corrections, all of whom see this initiative as a vital pipeline for meeting their workforce needs. Additionally, there is a growing demand for paraprofessional and professional roles in behavioral health that fall outside traditional social work and addiction counseling titles. This program is uniquely positioned to respond to these workforce demands by preparing graduates for a wide range of roles in behavioral health, thereby strengthening the regional care infrastructure and improving community well-being.

What are the project's metrics for success? How will these metrics be achieved?

Success for the Behavioral Health program will be measured by three primary milestones: hiring qualified faculty, developing a comprehensive and industry-relevant curriculum, and acquiring the necessary instructional equipment and materials. These foundational steps will ensure the program is well-prepared to deliver high-quality education from the start.

Enrollment growth will also serve as a key indicator of success. BSC anticipates an initial cohort of approximately 10 students in the first year, with projected increases of 5-10 students annually over the next four years. These goals will be achieved through strategic planning, strong institutional support, and collaboration with community partners to ensure the program meets regional workforce needs.

How does the project support student retention in North Dakota to meet the needs of local industries?

Bismarck State College's Bachelor of Applied Science in Behavioral Health supports student retention and addresses North Dakota's workforce shortages in mental health, addiction services, and social work by developing local talent. The program is strongly supported by community partners such as Community Options, YouthWorks, the Department of Health and Human Services, and the Department of Corrections. These organizations not only endorse the program but also collaborate on curriculum development, provide internship and practicum opportunities, and serve as potential employers –

creating a direct pipeline from education to employment. The program's stackable credentials and flexible format support non-traditional students, while local training opportunities increase the likelihood that graduates stay and serve in the region. Bismarck State College's introduction of a Bachelor of Applied Science (BAS) in Behavioral Health is a strategic response to both student retention goals and North Dakota's growing workforce needs in behavioral health and human services. Like many rural states, North Dakota faces a significant shortage of professionals in mental health, addiction services, and social work. By offering this degree, BSC is helping to develop local talent to fill these critical roles.

How are the students supported by this project prepared to enter the workforce with minimal additional on-the-job training?

Students in BSC's Behavioral Health BAS program are workforce-ready through hands-on training, industry-informed curriculum, and strong academic support. The program integrates real-world case studies, simulations, and internships in local clinics, schools, and social service agencies. Developed with input from behavioral health professionals, it emphasizes evidence-based practices, ethics, and communication skills. Stackable credentials allow students to gain field experience while completing their degree, reinforcing learning through practice. With mentorship from experienced faculty and career services support, graduates are well-prepared for immediate employment with minimal additional training.

Are there private sector partners in creating/offering the project?

Currently there is a Business and Industry Leadership Team, BILT for this degree that is comprised of members of the community who work in behavioral health and related areas. These industries are predominantly non-profit. They meet with faculty and administrators three times a year to provide feedback and suggestions on curriculum for the degree. This partnership helps faculty to ensure that students in the program remain workforce ready in terms of knowledge and skills. BILT group members can be guest speakers in the courses and can provide the opportunity for student internships.

Is this project offered in partnership with another NDUS institution?

No

Does this project support a program already approved per SBHE policies and NDUS procedures?

Yes

Describe how the project is novel and innovative.

This degree draws upon several disciplines, including psychology, sociology, social work, and criminal justice. The degree does not lead to licensure, which is intentional, as it is designed to make students workforce-ready right after graduation. People already working in these types of industries can enroll in this program to help with promotions and/or shifting to a different area within the field. Students who earn this degree will be prepared for a wide variety of jobs in human services, such as case management, care coordination, skills integration, crisis work, corrections, administration, and patient/resident care. The range of curriculum and potential careers allow students to explore what areas of behavioral health – human services, counseling, corrections, or social work – will be best suited for them. Students who wish to pursue licensure or advanced degrees will also be better prepared in terms of content knowledge and potential careers.

How will the project be sustained after WEIF Grant funding is expended?

The Behavioral health program will be sustained primarily through tuition revenue. Based on enrollment projections, the program is expected to become self-sustaining by Year 3, with a full cohort of approximately 25 students. In addition to tuition, ongoing support from local industry partners – through in-kind contributions, internship placements, and potential sponsorships – will help maintain program quality and relevance. Bismarck State College also plans to reallocate internal resources as needed to ensure the program's long-term viability and alignment with institutional priorities.

How will the project adapt over time to changing workforce needs and technological changes?

The Behavioral Health program was developed in close collaboration with both private and public sector partners to ensure alignment with current workforce demands. This collaborative approach will continue through regular engagement with advisory committee members, industry stakeholders, and community organizations. Their ongoing input will guide curriculum updates, emerging skill integration, and the adoption of relevant technologies. By maintaining strong industry connections and staying responsive to labor market trends, the program will remain agile and adaptable to evolving workforce and technological needs.

Behavioral Health Grant Budget		Year 1	Year 2
<u>Salaries (including Fringe)</u>			
Behavioral Health AAS Faculty	\$	95,000.00	\$ 97,850.00
Total Salaries	\$	95,000.00	\$ 97,850.00
<u>Curriculum Development</u>			
Curriculum Development 27 cr Year 1, 24 cr Year 2	\$	29,090.00	\$ 25,858.00
Total Curriculum Development	\$	29,090.00	\$ 25,858.00
Total Personnel Budget	\$	124,090.00	\$ 123,708.00
<u>Facility Modification & Equipment Install</u>			
		\$	-
Total Facility & Equipment Install	\$	-	\$ -
<u>Equipment & Technology (>\$10,000)</u>			
Hearing Voices Simulation	\$	1,497.00	
Faculty Laptop, docking station, monitor, software	\$	2,500.00	
Total Equipment	\$	3,997.00	\$ -
Total Direct Cost Budget		\$ 128,087.00	\$ 123,708.00
Total Behavioral Grant Budget Requested		\$	251,795.00

Year 2 is formulated with a 3% increase for estimation.

Curriculum Development is \$1,000 per credit plus taxes (7.739%) = \$1,077.39.

Personnel = Salary & Fringe + Curriculum Development Costs

\$ 251,795.00



2025-2027 Application for Workforce Education Innovation Grant Funds

Application Number

11

Institution

Bismarck State College

Applicant Name.

Dr. Daniel Leingang

Applicant Title.

Interim President

Applicant Department.

Bismarck State College

Project Title.

Workforce Ready: A Construction Management Education Initiative

Briefly describe the proposed project.

Bismarck State College seeks funding to support the development of an Associate of Applied Science in Construction Management. This new, 60-credit program is set to launch in Fall 2025, preparing students for leadership roles in residential, commercial, and infrastructure development. It emphasizes core competencies such as project planning, cost estimation, bidding, lean construction, and document management. Students will gain hands-on experience with industry-standard tools Building Information Modeling (BIM), Computer-Aided Drafting (CAD), Revit, and Geographic Information Systems (GIS), while also learning about OSHA 30 safety standards and construction ethics. Offered primarily face-to-face with some online and hybrid coursework, the program can be completed in two years of full-time study. Graduates will be workforce-ready and qualified for roles such as project manager, foreman, or construction manager.

Does the proposal meet the statutory guidance of N.D.C.C. 15-10-75?

Yes

Indicate which statutory objective this proposal will advance (as required by N.D.C.C. 15-10-75).

Curriculum Development; Equipment & technology purchases; Hiring and training new and existing instructors

Briefly describe how the funds will advance the objectives.

Funding will cover two years of faculty salary, ensuring instructional continuity and expertise during the critical startup phase. Additionally, funds will support the development of 29 new credit hours of curriculum (15 credits in Year 1 and 14 credits in Year 2), aligning with industry needs and educational standards. To facilitate effective instruction in hybrid and online learning components, the funds will also provide essential instructional equipment, including a faculty laptop, docking station, monitor, and required software.

When will the proposed program be ready to admit students?

Fall 2025

Amount of funding requested.

\$222,635

What other sources of funding or resources support the proposed project?

Bismarck State College has committed institutional funding and staff resources to support the development and launch of the Construction Management Associate of Applied Science (AAS) program, reflecting the college's dedication to addressing workforce needs in North Dakota's growing construction industry. In addition to internal support, BSC is actively engaging with industry partners – including local construction firms, trade associations, and engineering companies – who have expressed interest in contributing to the program through advisory roles, internship placements, guest lectures, and potential equipment or material donations. These partnerships not only enhance the program's relevance and alignment with current industry standards but also open the door to collaborative funding opportunities. BSC is pursuing private grant funding from construction-related foundations, workforce development initiatives, and corporate sponsors who are invested in building a skilled regional workforce.

Which identified workforce development need will this project address?

The project addresses the critical workforce need for qualified professionals in the rapidly growing field of construction management. Between August 2023 and November 2024, there were 4,688 job postings in this sector, highlighting strong employer demand for individuals skilled in project planning, cost estimation, and team coordination. With a projected 9.3% industry growth over the next 15 years, there is a clear need for educational programs that equip students with both technical and leadership skills. Employers consistently prioritize candidates with formal training in construction management, along with strong communication and problem-solving abilities. By offering a hands-on, technology-integrated AAS degree, this program directly responds to these workforce needs, preparing graduates to fill high-demand roles and contribute effectively to residential, commercial, and infrastructure projects.

What are the project's metrics for success? How will these metrics be achieved?

The grant objectives will be achieved by hiring a qualified faculty member with a strong industry background to ensure instruction is grounded in real-world experience. Recruitment efforts will focus on attracting professionals who bring both technical expertise and leadership skills to the classroom. To support faculty in delivering high-quality instruction, the program will provide essential equipment, including a laptop, docking station, monitor, and specialized software.

Curriculum development is a central focus, with 15 new credit hours to be created in the first year and 14 in the second. Faculty will be given dedicated time and institutional support to design coursework

that reflects current industry standards and practice.

The program aims to enroll at least 15 students in the first year. This goal will be supported through targeted outreach, collaboration with industry partners, and academic advising tailored to the needs of both traditional and non-traditional students. Industry engagement will be maintained through an advisory board and ongoing memberships, which will provide feedback on curriculum relevance and help align the program with workforce needs.

How does the project support student retention in North Dakota to meet the needs of local industries?

By offering a practical, career-focused education grounded in local industry needs, the program encourages students to stay in North Dakota to study, work, and build their futures. Students will gain hands-on experience with industry-standard tools such as BIM, CAD, Revit, and GIS – skills that are immediately applicable to jobs currently available in the state. Flexible course delivery, including hybrid and online options, supports non-traditional students balancing work or family responsibilities, increasing access and retention. This program is strategic investment in North Dakota's economy, helping retain talent, meet employer demand, and strengthen the state's infrastructure workforce from within.

How are the students supported by this project prepared to enter the workforce with minimal additional on-the-job training?

The Construction Management program at Bismarck State College – North Dakota's only polytechnic institution – with thoroughly prepare students to enter the workforce with minimal additional on-the-job training. The program is built in close collaboration with industry partners to ensure that the curriculum aligns with current job requirements across residential, commercial, and infrastructure sectors.

Hands-on learning is central to the program's design. Students gain practical experience using industry-standard tools. In addition to technical training, coursework includes essential topics such as project management, cost estimating, bidding, and document control, all of which are critical for entry-level supervisory and management roles. By the time students graduate, they are not only academically prepared but also equipped with the practical skills and certifications needed to contribute immediately in the field. This reduces the burden on employers to provide extensive training and allows graduates to quickly add value to their organizations.

Are there private sector partners in creating/offering the project?

This program is the result of private sector/industry influence through a Business and Industry Leadership (BILT) Team established to review the possibility of adding an AAS degree with the possibility of a future BAS in construction management. Members provide information through a survey on curriculum options, certifications and licensing expectations, student outcomes of associate prepared students, and employability information. Results showed members were open to enrolling employees into coursework of a new program to enhance their professional development. These members also saw an untapped market in incumbent or underemployed members of the workforce to target for enrollments in this new program. These groups meet with division leadership and faculty 2-3 times per year to provide feedback and direction on program curriculum and workforce demands.

Is this project offered in partnership with another NDUS institution?

No

Does this project support a program already approved per SBHE policies and NDUS procedures.

Yes

Describe how the project is novel and innovative.

By offering a two-year degree in Construction Management, BSC will create an alternative to the traditional four-year bachelor's degree pathway. This accelerated pathway allows students to enter the workforce more quickly, reducing both educational costs and time to employment, which is especially valuable in rural and underserved areas of North Dakota. The program's flexible delivery model – which includes face-to-face instruction with hybrid and online components – supports a diverse student population. The program is uniquely designed in direct collaboration with industry partners, ensuring that the curriculum is immediately relevant to the needs of employers. This real-time alignment with workforce demand is a key to job placement outcomes and employer satisfaction. In addition to its industry-driven design, the program integrates cutting-edge construction technologies not commonly emphasized in traditional two-year programs, giving students a competitive edge and reducing the need for extensive on-the-job training.

How will the project be sustained after WEIF Grant funding is expended?

Bismarck State College has allocated institutional funds to initiate and support the program in the long-term. Additionally, industry partners will provide critical support through in-kind contributions such as equipment, materials, and internship opportunities, as well as direct financial sponsorships. These partnerships reflect strong regional demand and commitment from the construction sector. Once operational, the program is expected to generate tuition revenue, further contributing to its long-term viability. We are also actively pursuing additional grant opportunities to expand and enhance the program's impact and infrastructure.

How will the project adapt over time to changing workforce needs and technological changes?

Adaptability is embedded in the program through an established industry advisory board composed of local employers, construction professionals, and workforce development leaders. This board meets regularly to evaluate curriculum content, identify emerging trends, and recommend updates to ensure the program remains aligned with evolving industry expectations. The curriculum is intentionally designed to be modular and responsive, allowing for the seamless integration of new technologies and practices. As advancements occur – such as in Building Information Modeling (BIM), Revit, or drone-based site surveying – the program will incorporate updated software, tools, and instructional strategies to reflect these changes. Faculty will participate in ongoing professional development to stay current with industry innovations and pedagogical best-practices, ensuring they are equipped to teach the latest tools and techniques. Additionally, feedback from employers and student internship experiences will be continuously gathered and used to refine course content and learning outcomes. This dynamic feedback loop ensures the program remains relevant, future-focused, and capable of preparing graduates to succeed in a rapidly evolving construction industry.

Construction Mgmt Grant Budget	Year 1	Year 2
Salaries (including Fringe)		
Construction Mgmt AAS Faculty	\$ 93,049.00	\$ 95,841.00
Total Salaries	\$ 93,049.00	\$ 95,841.00
Curriculum Development		
Curriculum Development 15 Cr Year 1, 14 Cr Year 2	\$ 16,161.00	\$ 15,084.00
Total Curriculum Development	\$ 16,161.00	\$ 15,084.00
Total Personnel Budget	\$ 109,210.00	\$ 110,925.00
Facility Modification & Equipment Install		
		\$ -
Total Facility & Equipment Install	\$ -	\$ -
Equipment & Technology (>\$10,000)		
Faculty Laptop, docking station, monitor, software	\$ 2,500.00	
Total Equipment	\$ 2,500.00	\$ -
Total Direct Cost Budget	\$ 111,710.00	\$ 110,925.00
Total Dental Grant Budget Requested	\$ 222,635.00	

Year 2 is formulated with a 3% increase for estimation.

Curriculum Development is \$1,000 per credit plus taxes (7.739%) = \$1,077.39.

Personnel = Salary & Fringe + Curriculum Development Costs

\$ 222,635.00



2025-2027 Application for Workforce Education Innovation Grant Funds

Application Number

13

Institution

Bismarck State College

Applicant Name.

Dr. Daniel Leingang

Applicant Title.

Interim President

Applicant Department.

Bismarck State College

Project Title.

Smart Systems, Skilled Hands: Advancing Technical Education through Mechatronics at BSC

Briefly describe the proposed project.

Bismarck State College is requesting start-up funding to establish a Mechatronics Engineering Technology program that addresses the growing workforce needs of central and western North Dakota. This interdisciplinary program will combine electrical and mechanical systems with key components of electronics, programming, communications, systems control, and product engineering. Graduates will be prepared to work with advanced smart technologies such as robotics, automated guided systems, and computer-integrated manufacturing equipment. To ensure students are workforce-ready, the project includes hiring skilled faculty with real-world industry experience, developing a robust and industry-aligned curriculum.

Does the proposal meet the statutory guidance of N.D.C.C. 15-10-75?

Yes

Indicate which statutory objective this proposal will advance (as required by N.D.C.C. 15-10-75).

Curriculum Development; Equipment & technology purchases; Hiring and training new and existing instructors

Briefly describe how the funds will advance the objectives.

The requested funds will directly support the launch and sustainability of the Mechatronics Engineering Technology program by funding curriculum development, equipment and technology purchases, and hiring and training new instructors. Hiring a dedicated faculty member in the program's second year will ensure students are trained by someone with expertise in the field. Additionally, the grant will support the development of nine credits of new curriculum per year over a two-year period, allowing for the creation

of robust, industry-aligned coursework. To equip faculty with the necessary tools for instruction and program development, the proposal also includes funding for essential technology such as a laptop, docking station, monitor, and specialized software.

When will the proposed project be ready to admit students?

Fall 2025

Amount of funding requested.

\$216,288

What other sources of funding or resources support the proposed project?

BSC received grant funding from the National Science Foundation (NSF) to start the new Industrial Automation and Robotics AAS that feeds into the Mechatronics Engineering Technology Bachelor of Applied Science pathway. With that initial NSF Advance Technological Education (ATE) grant coming to a close, BSC has been selected for the NSF ATE Mentor Connect Program, which is guiding the college in submitting an NSF ATE Moving Up grant proposal to fund the expansion of mechatronic technology into dual credit programming at Career and Technical Education Centers in the state. At the same time, BSC continues to utilize its program advisory boards and Business and Industry Leadership Teams to provide guidance and direction on programming, while also cultivating relationships to encourage industry assistance through scholarships, equipment donations, and other support.

Which identified workforce development need will this project address?

The Mechatronics Engineering Technology program at Bismarck State College directed addresses a critical workforce development need in North Dakota and the surrounding region. According to recent labor market data from Job Service North Dakota, occupations related to mechatronics – such as industrial maintenance technicians, automation specialists, and robotics technicians – are consistently listed among the state’s high-demand technical careers. The state’s long-term employment projections show continued growth in fields requiring skills in mechanical systems, electronics, and automation, with particularly strong demand in manufacturing, energy, and advanced agriculture sectors. Median wages for related occupations in North Dakota range from \$65,000 to over \$90,000 annually, depending on specialization and experience.

BSC’s analysis, supported by tools such as Burning Glass and Gray Associates, confirms that mechatronics-related roles are not only in demand but also evolving rapidly with technological advancements. The National Coalition of Advanced Technology Centers has also identified mechatronics and automation as priority areas for workforce development. This program will fill a critical gap by preparing students with the interdisciplinary skills needed to support North Dakota’s growing automation economy, ensuring a pipeline of qualified professionals ready to meet current and future industry needs.

What are the project’s metrics for success? How will these metrics be achieved?

The goals of this project will be to hire a well-qualified faculty member for Fall semester of 2026, and to develop 9 credits of curriculum each year of the grant. Enrollment goals for mechatronics are to have 20 students in the first year of the program, with 18 of them returning the second year, and an additional 25 new student enrollments. The metrics will be achieved through the work of BSC’s Dean and Assistant Deans of Automation, Energy, and Advanced Technologies in collaboration with admissions and enrollment management

How does the project support student retention in North Dakota to meet the needs of local industries?

The Mechatronics Engineering Technology program will play a vital role in retaining students in North

Dakota by aligning educational pathways with the specific needs of local industries. By offering hands-on training in automation, robotics, and smart manufacturing technologies, the program prepares students for high-demand, high-skill careers that are readily available within the region. Strong partnerships with local employers will provide students with internship opportunities, real-world experience, and clear employment pipelines upon graduation. This direct connection between education and local workforce needs not only enhances job placement rates but also encourages graduates to remain in the state, contributing to the economic growth and technological advancement of North Dakota.

How are the students supported by this project prepared to enter the workforce with minimal additional on-the-job training?

Students supported by the Mechatronics Engineering Technology program at Bismarck State College will be well-prepared to enter the workforce with minimal additional on-the-job training, thanks to a curriculum that emphasizes hands-on experience and industry relevance. The program is structured around stackable credentials, allowing students to earn certificates and technical diplomas on their way to completing the full degree. This approach enables learners to build practical skills in stages and enter the workforce at multiple entry points, depending on their career goals. Courses are developed in collaboration with industry partners and focus on real-world applications in robotics, automation, and smart manufacturing. Students will train on industry-standard equipment and technologies, and gain experience through lab-based instruction and internships, ensuring they graduate with the competencies employers need – ready to contribute from day one.

Are there private sector partners in creating/offering the project?

Yes, the Mechatronics Engineering Technology program is actively supported by private sector partners through the Manufacturing Business and Industry Leadership Team (BILT). This advisory group, composed of regional industry leaders, meets regularly with Bismarck State College faculty and division leadership to provide strategic input on curriculum development, emerging technologies, and workforce trends. Their guidance ensures the program remains aligned with real-world industry needs and prepares students for in-demand careers. In addition to their advisory role, BILT members contribute tangible support through equipment donations, access to training facilities, and other in-kind resources that enhance the hands-on learning experience. These partnerships are essential to maintaining a responsive, high-quality program that directly serves the needs of North Dakota's manufacturing and automation sectors.

Is this project offered in partnership with another NDUS institution?

No

Does the project support a program already approved per SBHE policies and NDUS procedures?

Yes

Describe how the project is novel and innovative.

The Mechatronics Engineering Technology BAS program is a uniquely interdisciplinary and forward-thinking initiative that blends electrical and mechanical systems with electronics, programming, communications, systems control, and product engineering. What sets this program apart is its stackable credential structure, allowing students to build skills progressively and enter the workforce at multiple points along their educational journey.

How will the project be sustained after WEIF Grant funding is expended?

The Mechatronics Engineering Technology program will be sustained beyond the WEIF Grant period through a combination of tuition revenue generated by student enrollment, ongoing support from industry partnerships, and the pursuit of additional grant opportunities. These funding streams will

ensure the program remains financially viable while continuing to meet regional workforce needs and evolving industry demands.

How will the project adapt over time to changing workforce needs and technological changes?

The Mechatronics Engineering Technology program at Bismarck State College is designed with flexibility and responsiveness at its core to ensure long-term relevance in a rapidly evolving industry. The curriculum will be regularly reviewed and updated in collaboration with industry partners to reflect emerging technologies, automation trends, and workforce demands. Faculty will engage in ongoing professional development to stay current with advancements in mechatronics, robotics, and smart manufacturing. Additionally, the program will incorporate modular and stackable credentials, allowing for quick adaptation to new skills and certifications as industry needs shift. This proactive approach ensures that graduates remain competitive and well-prepared for the future of work.

Mechatronics Grant Budget		Year 1	Year 2
Salaries (including Fringe)			
Mechatronics Engineering BAS Faculty			\$ 106,592.00
Total Salaries	\$	-	\$ 106,592.00
Curriculum Development			
Curriculum Development 9 Credits/year	\$	9,697.00	\$ 9,697.00
Total Curriculum Development	\$	9,697.00	\$ 9,697.00
Total Personnel Budget	\$	9,697.00	\$ 116,289.00
Facility Modification & Equipment Install			
			\$ -
Total Facility & Equipment Install	\$	-	\$ -
Equipment & Technology (>\$10,000)			
Faculty Laptop, docking station, monitor, software			\$ 2,500.00
Cobots	\$	87,802.00	
Total Equipment	\$	87,802.00	\$ 2,500.00
Total Direct Cost Budget	\$	97,499.00	\$ 118,789.00
Total Dental Grant Budget Requested	\$	216,288.00	

Year 2 is formulated with a 3% increase for estimation.

Curriculum Development is \$1,000 per credit plus taxes (7.739%) = \$1,077.39.

Personnel = Salary & Fringe + Curriculum Development Costs

\$ 216,288.00



2025-2027 Application for Workforce Education Innovation Grant Funds

Application Number

14

Institution

Bismarck State College

Applicant Name.

Dr. Daniel Leingang

Applicant Title.

Interim President

Applicant Department.

Bismarck State College

Project Title.

Launching a Higher Ed Solution to the Electrician Workforce Shortage

Briefly describe the proposed project.

This proposed program will establish a new Electrician Technician Associate of Applied Science degree at Bismarck State College to address the growing workforce shortage in the electrical trades. Designed to prepare students for apprentice-level electrician roles in residential, commercial, and industrial settings. The program will also emphasize instrumentation and control systems to support the region's increasing demand for automation and smart technologies. The curriculum will be delivered through a combination of face-to-face and hybrid courses, allowing flexibility while maintaining hands-on training. The program is structured to be completed in four semesters by full-time students and will operate as a limited-enrollment cohort, admitting up to 18 new students per cohort annually.

Does the proposal meet the statutory guidance of N.D.C.C. 15-10-75?

Yes

Indicate which statutory objective this proposal will advance (as required by N.D.C.C. 15-10-75).

Equipment & technology purchases; Hiring and training new and existing instructors

Briefly describe how the funds will advance the objectives.

Grant funds will directly support the launch and sustainability of Bismarck State College's new Electrician Technician program by addressing critical instructional needs. Funding will cover the second year of salary and benefits for the program's first faculty member, ensuring continuity and instructional quality for the inaugural student cohort.

Additionally, the grant will support the hiring of a second electrician faculty member, with salary and fringe benefits covered for both the first and second years. This is essential to accommodate student demand, maintain small class sizes, and deliver hands-on, safety-focused instruction.

Funds will also provide essential instructional technology, including a faculty laptop, docking station, monitor,

and software – tools necessary for hybrid course delivery. These investments will ensure the program is fully-staffed and equipped to meet its goal of preparing skilled electricians to fill regional workforce gaps.

When will the proposed project be ready to admit students?

Fall 2025

Amount of funding requested.

\$287,011

What other sources of funding or resources support the proposed project?

Bismarck State College has allocated institutional funds to initiate and support the development of the program, including the use of existing staff resources. Additionally, a State Energy Program Electrician Grant from the Department of Commerce was recently completed. This grant, along with an in-kind match from industry partners, provided funding to cover the faculty salary for the first year and to purchase startup equipment essential for hands-on learning.

Which identified workforce development need will this project address?

This project directly addresses a critical workforce shortage in the electrical trades. According to Lightcast data, North Dakota is projected to see a 15.1% increase in demand for electricians over the next 10 years, with over 900 annual job openings statewide. This highlights the urgent need for expanded education and training opportunities. Industry partners on the program's BILT – including Skeels Electric, Falkirk Mine, Goody Electric, 369 Electric, MDU, Weber Electric, and Rainbow Energy – have confirmed this demand within their organizations.

What are the project's metrics for success? How will these metrics be achieved?

BSC will ensure the hiring of skilled faculty members with strong industry backgrounds. One faculty member has already been hired with support from an initial grant. This grant will support that position in the second year and will help fund a second electrician faculty, ensuring instructional capacity and program continuity to meet the incredibly high demand – with a waitlist already stretching through fall 2027. To support the new faculty member in delivering high-quality instruction, the program will provide essential equipment, including a laptop, docking station, monitor, and specialized software.

The program will follow a limited-enrollment model, admitting up to 18 students annually per cohort to maintain high-quality, hands-on instruction and strong student support. This cohort approach promotes safety, engagement, and retention. This grant will enable BSC to double these enrollments to 36 students in two cohorts by hiring a second faculty member. Targeted outreach and strong collaboration with industry partners, combined with academic advising tailored to the needs of both traditional and non-traditional students, will support full enrollment.

How does the project support student retention in North Dakota to meet the needs of local industries?

The Electrician Program at Bismarck State College offers a structured, academic route to becoming a journeyman electrician, which complements and relieves pressure on the traditional apprenticeship system. By providing foundational training through a two-year AAS degree, students enter the workforce with essential skills and knowledge, making them more prepared and efficient as apprentice-level workers. This approach allows employers to onboard individuals who already meet many of the technical and safety requirements typically taught during the early stages of an apprenticeship. As a result, employers can take on more apprentices overall, knowing that program graduates require less initial training and supervision. By shifting part of the training burden to the college, this model increases the capacity of the apprenticeship system, enabling a greater volume of workers to enter the field more quickly. It also helps employers meet urgent labor demands while maintaining high standards

of safety and competency – ultimately accelerating the development of skilled, local electrician workforce in North Dakota.

How are the students supported by this project prepared to enter the workforce with minimal additional on-the-job training?

Students in the Electrician Technician Program at Bismarck State College are prepared to enter the workforce with minimal additional on-the-job training due to the program's strong emphasis on hands-on, industry-aligned instruction. The curriculum is developed in collaboration with the BILT, ensuring that course content reflects current industry standards, technologies, and safety practices.

Students gain practical experience through lab-based learning that simulates real-world residential, commercial, and industrial environments. The program also emphasizes instrumentation and control system, preparing students for roles in automation and advanced electrical systems – skills that are increasingly in demand.

Are there private sector partners in creating/offering the project?

Business and Industry Leadership Team (BILT) members, representing key regional employers such as Skeel Electric, Falkirk Mine, Goody Electric, 369 Electric, MDU, Weber Electric, and Rainbow Energy, meet with Bismarck State College faculty and leadership two to three times per year to provide critical input on curriculum design, equipment needs, and evolving workforce demands. Their feedback ensures that the program remains aligned with real-world expectations and prepares students with the skills employers need.

Is this project offered in partnership with another NDUS institution?

No

Does this project support a program already approved per SBHE policies and NDUS procedures?

Yes

Describe how the project is novel and innovative.

The Electrician Technician Program at Bismarck State College is innovative in both its regional impact and instructional design. It is the first post-secondary program of its kind in western North Dakota, addressing a critical gap in electrician education and training. By offering a local, structured pathway into the electrical trades, the program expands access to high-demand careers for students across the region.

What sets this program apart is a final semester that emphasizes instrumentation and control, preparing students for both traditional electrical work and automation, areas of growing importance in modern infrastructure and energy sectors.

The program follows a polytechnic training model, blending academic instruction with hands-on, applied learning. Graduates will be workforce-ready and eligible to begin their apprenticeships, accelerating their path toward journeyman licensure. This approach supports both immediate employment and long-term career advancement, making the program a forward-thinking solution to workforce development in North Dakota.

The BILT has also explored high school pathway partnerships and sees strong potential for collaboration with new career academies and other employers across residential and industrial sectors to more quickly meet the workforce demands.

How will the project be sustained after WEIF Grant funding is expended?

Bismarck State College is committed to ensuring the long-term success of the Electrician Technician Program beyond the WEIF Grant period. The college will sustain the program through a combination of internal resource allocation and tuition revenue generated by student enrollment. Institutional support is already in place to cover core expenses, including faculty salaries and operational needs.

Equally important is the continued backing from industry partners, who contribute vital in-kind support that helps reduce costs. These partnerships not only strengthen the program's relevance but also reinforce its value to the regional workforce. To build on this momentum, BSC will actively pursue additional grant opportunities to expand the program's reach, enhance its infrastructure, and support innovation.

How will the project adapt over time to changing workforce needs and technological changes?

The Electrician Technician Program is built to evolve alongside industry demands and technological advancements. Bismarck State College will maintain strong collaboration with its BILT and the North Dakota State Electrical Board to ensure the program remains aligned with current licensing requirements, safety standards, and workforce expectations.

These partners meet regularly with faculty and college leadership to provide input on curriculum updates, emerging technologies, and evolving skill needs. Their guidance ensures that students are trained on the latest tools, systems, and practices used in the field – including growing areas such as automation, smart systems, and energy-efficient technologies.

Electrician Grant Budget		Year 1	Year 2
Salaries (including Fringe)			
Electrician AAS Faculty #2	\$	88,650.00	\$ 91,310.00
Electrician AAS Faculty #1		-	\$ 104,551.00
Total Salaries	\$	88,650.00	\$ 195,861.00
Curriculum Development			
Curriculum Development X Credits/year	\$	-	\$ -
Total Curriculum Development	\$	-	\$ -
Total Personnel Budget	\$	88,650.00	\$ 195,861.00
Facility Modification & Equipment Install			
			\$ -
Total Facility & Equipment Install	\$	-	\$ -
Equipment & Technology (>\$10,000)			
Faculty Laptop, docking station, monitor, software	\$	2,500.00	
Total Equipment	\$	2,500.00	\$ -
Total Direct Cost Budget	\$	91,150.00	\$ 195,861.00
Total Dental Grant Budget Requested	\$	287,011.00	

Year 2 is formulated with a 3% increase for estimation.

Curriculum Development is \$1,000 per credit plus taxes (7.739%) = \$1,077.39.

Personnel = Salary & Fringe + Curriculum Development Costs

\$ 287,011.00



2025-2027 Application for Workforce Education Innovation Grant Funds

Application Number

15

Institution

Bismarck State College

Applicant Name.

Dr. Daniel Leingang

Applicant Title.

Interim President

Applicant Department.

Bismarck State College

Project Title.

Reconceptualizing a Sustainable Educator Pipeline to Respond to the Paraprofessional and Teacher Shortage Crisis by Offering a BAS in Foundations of Teaching

Briefly describe the proposed project.

The project will establish North Dakota's first sustainable para-to-teacher pipeline through a dual-degree program that embeds Title I Paraprofessional training and stacks toward full teacher licensure. In partnership with other NDUS institutions, students will co-enroll in the Bachelor of Applied Science at Bismarck State College and the Bachelor of Science in Education at either Valley City State University or Minot State University, earning two bachelor's degrees within four years.

The program is designed to allow school districts to hire students early in their academic journey as teacher aides, progressing to Title I Paraprofessionals (with embedded coursework leading to the Certificate of Completion), and ultimately to fully licensed classroom teachers upon graduation and licensure. To support this innovative model, the project includes the hiring of faculty, development of responsive and inclusive curriculum, and investment in essential technology to facilitate instruction, advising, and collaboration across institutions. This initiative directly addresses urgent workforce shortages and supports long-term community sustainability.

Does the proposal meet the statutory guidance of N.D.C.C. 15-10-75?

Yes

Indicate which statutory objective this proposal will advance (as required by N.D.C.C. 15-10-75).

Curriculum Development; Equipment & technology purchases; Hiring and training new and existing instructors; Enhancement of postsecondary partnerships with primary and secondary schools

When will the proposed project be ready to admit students?

Later than Fall 2027

Amount of funding requested.

\$160,805

What other sources of funding or resources support the proposed project?

The proposed project is supported by a combination of existing institutional funding and in-kind resources. Current budget lines already fund several Education courses, and the additional full-time faculty position created through this grant will be fully absorbed by the College once the grant period concludes. Tuition revenue will continue to support all Education course offerings. Administratively, the program will benefit from the ongoing support of the Dean and Assistant Dean, while a strong pool of qualified adjunct instructors with specialized expertise will deliver select courses, also funded through tuition. The program will further leverage existing institutional resources, including access to classrooms, tutoring services, instructional technology, and the Teaching & Learning Center's course design staff, all of which are integrated into the College's current operational framework.

Which identified workforce development need will this project address?

Among the highest number of job postings nationally are those in education: Title I Paraprofessional, substitute teachers, and fully licensed teachers in all areas. The need in North Dakota slightly exceeds the national average in all areas of education. There is a high attrition rate for teachers from burnout which has resulted in the crisis. This program speaks to the combined critical needs for Title I Paraprofessionals and licensed teachers who understand learning theory and brain-based teaching methods. According to LightCast data for paraprofessional and teachers, the skills of communication, child development, teaching, and leadership/management are critical to the job and are most commonly listed in job postings. Within a 4-state region, "Educational Services" ranks the highest in number of openings (above healthcare).

What are the project's metrics for success? How will these metrics be achieved?

The success of this project will be measured through a combination of enrollment growth, academic performance, and progression into educator preparation programs. Specific enrollment targets include 15 students in Fall 2025, increasing to 20 in Spring 2026, 30 in Fall 2026, and reaching 35 by Spring 2027. Academic success will be tracked through course pass rates, with a goal of achieving a 90% pass rate by Spring 2027. Additionally, the project aims for a 95% entrance rate into partnering institutions' Educator Preparation Programs by the same timeframe. These metrics will be achieved through intentional recruitment, high-quality instruction, targeted student support, and strong collaboration with partner institutions to ensure seamless transitions and alignment with program expectations.

How does the project support student retention in North Dakota to meet the needs of local industries?

This project directly supports student retention in North Dakota by creating a clear, supported pathway from paraprofessional roles to full teacher licensure, addressing the state's critical educator shortage. The dual-degree structure, in partnership with NDUS institutions, allows students to remain in their communities while advancing their education and careers. Further, the program is intentionally designed to build educator tenacity and endurance – what we call "stick-to-it-iveness." It is field based, meaning students will be placed in school settings every semester, allowing them to immediately apply theory to practice. This consistent, immersive experience in professional environments not only strengthens their skills but also deepens their connection to local schools and communities. Importantly, the program's flexible design enables students to work full-time in schools while completing their training. This real-world integration supports both academic persistence and long-term retention in the education workforce across North Dakota.

How are the students supported by this project prepared to enter the workforce with minimal additional on-the-job training?

Due to the unique nature of this program that involves co-enrollment with another NDUS institution (VCSU or MiSU), students will receive intensive foundations in education training through coursework and consistent field work through BSC, and the advanced licensing coursework and student teaching (field work) through the partnering institution. In reality, this is the most intensive teacher and Title I Paraprofessional training in the state. No training will be needed beyond graduation.

Are there private sector partners in creating/offering the project?

BSC's BAS degree will re-establish the Business Industry Leadership Team (BILT) based on its re-imagined mission. This team will inform the development of this program to ensure alignment with industry needs. Further, P-12 schools (public and private) will support the offering of this program by providing field placements for our students to connect theory with practice.

Is this project offered in partnership with another NDUS institution?

Yes – while the BAS is offered by Bismarck State College, it is dependent upon 30+ credit hours of advanced teacher licensure coursework at the partner institution (Valley City State University or Minot State University) to equate to 120 credits. Valley City State University will provide the advanced licensing coursework for Elementary Education, K-12 Physical Education, Secondary Education (multiple subject areas), and Career and Technical Education (CTE) fields. Minot State University will provide the advance licensing coursework for Early Childhood Education, Elementary Education, and K-12 Special Education.

Does project support a program already approved per SBHE policies and NDUS procedures?

Yes

Describe how the project is novel and innovative.

This project is the first program in our state to allow Title I Paraprofessional training to be (a) credit-bearing, (b) stackable toward a bachelor's degree, and (c) stackable toward full teacher licensure. It is also the first program in our state to bridge this unique programming with simultaneous enrollment in another institution for conferral of two bachelor's degrees in four years that will lead to full teacher licensure. Students enrolled in this program may also be hireable by school districts and access their formal preparation for these roles online or on-campus, offering the flexibility needed to reach nontraditional audiences.

One of the strongest barriers to filling the Title I Paraprofessional and teacher gaps in today's schools includes college entrance criteria. Given Bismarck State's unique standing in North Dakota, we are able to accept all high school graduates (and those with GEDs) and provide intensive academic supports to help them improve their GPA to meet entrance criteria to the partner institution's Educator Preparation Program. Students will consistently progress: while students are working toward their Title I Paraprofessional Certificate of Completion coursework at BSC and earning an improved GPA, they will also begin to meet the entrance criteria to full teacher preparation programs without an imposed ceiling to their advancement.

How will the project be sustained after WEIF Grant funding is expended?

Bismarck State will absorb the financial cost of the faculty line and the annual subscription to the data housing system after the grant is complete. In addition, BSC will continue to cover the cost of professional development/training for the faculty member (conference attendance/travel). Tuition revenue from course enrollments will pay for adjunct instructors.

How will the project adapt over time to changing workforce needs and technological changes?

Bismarck State College will convene a BILT of industry partners who will inform program offerings and program improvement. Data will be shared from the metrics listed above during semi-annual BILT meetings to facilitate discussion. A national and state presence will continue in the educator preparation organization AACTE (American Association of Colleges for Teacher Education) and trainings in accreditation standards pertaining to educator preparation (CAEP/ESPB). The Education faculty member will be encouraged to participate in state trainings offered by regional education associations.

Teaching Grant Budget		Year 1	Year 2
Salaries (including Fringe)			
Teacher Education Faculty	-	\$	91,005.00
Total Salaries	\$	-	\$ 91,005.00
Curriculum Development			
Curriculum Development 16 cr year 1, 15 cr year 2	\$	17,239.00	\$ 16,161.00
Total Curriculum Development	\$	17,239.00	\$ 16,161.00
Total Personnel Budget	\$	17,239.00	\$ 107,166.00
Facility Modification & Equipment Install			
		\$	-
Total Facility & Equipment Install	\$	-	\$ -
Equipment & Technology (>\$10,000)			
Anthology Data System	\$	29,450.00	\$ 4,450.00
Faculty Laptop, docking station, monitor, software		\$	2,500.00
Total Equipment	\$	29,450.00	\$ 6,950.00
Total Direct Cost Budget	\$	46,689.00	\$ 114,116.00
Total Dental Grant Budget Requested	\$	160,805.00	

Year 2 is formulated with a 3% increase for estimation.

Curriculum Development is \$1,000 per credit plus taxes (7.739%) = \$1,077.39.

Personnel = Salary & Fringe + Curriculum Development Costs

\$ 160,805.00

Application Number

5

Institution

Dakota College at Bottineau

Applicant Name.

Kayla O'Toole

Applicant Title.

Associate Dean for Academic Affairs

Applicant Department.

Academic Affairs

Project Title.

Transition of Paramedic Technology Program to Dakota College at Bottineau to Support Regional EMS Workforce Needs

Briefly describe the proposed project.

Dakota College at Bottineau (DCB) has collaborated with Trinity Health to offer a Paramedic Technology Associate of Applied Science (AAS) degree and certificate program through a contractual arrangement based in Minot. Under this model, Trinity Health has provided faculty, facilities, and equipment, while DCB conferred academic credit. As the program has grown, it has become increasingly evident that long-term sustainability and program development would be best served by fully transitioning it under DCB's ownership. This proposal outlines the transition of the Paramedic program to a fully DCB-operated model, with DCB assuming responsibility for faculty employment and program administration. While Trinity Health will no longer provide instructional funding, it remains a valued partner and will continue to collaborate with DCB. This transition supports workforce education innovation, enhances institutional capacity, and ensures the continued alignment of EMS training with regional workforce needs.

Does the proposal meet the statutory guidance of N.D.C.C. 15-10-75?

Yes

Indicate which statutory objective this proposal will advance (as required by N.D.C.C. 15-10-75).

Curriculum Development; Equipment & technology purchases; Facility modifications and equipment installation; Hiring and training new and existing instructors; Education program promotion; Enhancement of postsecondary partnerships with primary and secondary schools

Briefly describe how the funds will advance the objectives.

Grant funds will be used to support the salary and benefits for one full-time faculty member, as well as

fund an adjunct faculty position, to strengthen instructional capacity within the paramedic program. Additionally, funds will be allocated for the purchase of updated medical training equipment to align with current industry standards. The program is being transitioned to the DCB downtown facility in Minot, where our Career and Technical Education (CTE) offerings are centralized. This move will require updates to curriculum materials and outreach efforts to promote the new program location and structure. Furthermore, this transition creates opportunities to enhance engagement with regional high schools, including potential dual credit pathways, allowing students to begin their training in emergency medical services while still in high school.

When will the proposed project be ready to admit students?

Fall 2025

Amount of funding requested.

\$467,500

What other sources of funding or resources support the proposed project?

Additional financial support will come from tuition revenue and program-specific fees. The program will be located in the existing DCB Downtown facility, which is currently leased by Dakota College at Bottineau, eliminating the need for new construction or major capital investment. Furthermore, existing partnerships, particularly with Trinity Health, will provide access to donated or low-cost equipment, helping to reduce startup and operational costs.

Which identified workforce development need will this project address?

According to Job Service North Dakota, healthcare remains one of the state's highest-demand sectors. Among the occupations identified as high need are Emergency Medical Technicians (EMTs) and Paramedics. This project directly addresses the workforce gap by expanding educational capacity and training opportunities for future EMS professionals in the region.

What are the project's metrics for success? How will these metrics be achieved?

Success will be measured through several key metrics:

Enrollment Growth and Stability – The program is at capacity at eight students, with the potential to expand to ten. An increase in enrollment will serve as a measurable indicator of growth.

Program Completion Rates – Completion rates will be closely tracked to establish and achieve targeted benchmarks for student success.

Certificate Pass Rates – Success will be demonstrated by an increase in the number of students passing the national certification exam.

Job Placement Rates – Employment outcomes will be monitored, with the goal of graduates securing EMS-related positions within six months of program completion.

These outcomes will be achieved through targeted program promotion, strengthened partnerships with healthcare providers and local schools, modernized training equipment, and increased instructional capacity.

How does the project support student retention in North Dakota to meet the needs of local industries?

This project enhances student retention by offering accessible, high-quality EMS training in Minot, making it easier for local students to pursue careers in emergency services. Partnerships with local healthcare providers, like Trinity Health, offer hands-on experience and strong employment opportunities pathways, encouraging graduates to stay in North Dakota and meet the growing demand

for EMS professionals in rural areas.

How are the students supported by this project prepared to enter the workforce with minimal additional on-the-job training?

Students in this program receive hands-on training using state-of-the-art equipment and real-world clinical experience through partnerships with local healthcare providers, such as Trinity Health. The curriculum aligns with national EMS standards, ensuring students are well-prepared for certification exams and the specific demands of the EMS workforce. With current accreditation, students receive training in the cognitive, psychomotor, and affective domains that prepare them to enter the workforce as competent entry-level paramedics. By the time they graduate, students are equipped with the skills and knowledge needed to excel in their roles, minimizing the need for extensive on-the-job training.

Are there private sector partners in creating/offering the project?

Yes, Trinity Health, a key private sector partner, collaborates with the program by donating EMS equipment. Their involvement ensures students receive practical, real-world training, aligning with industry standards and improving job readiness. This partnership also helps bridge the gap between education and employment, fostering strong working connections in the healthcare sector.

Is this project offered in partnership with another NDUS institution?

Yes, this project is in partnership with Minot State University, as DCB is leasing the DCB Downtown facility from them. Minot State University contributes by providing the physical space for the CTE programming, which is equipped to support our paramedic training and enhance collaboration between the two institutions.

Does the project support a program already approved per SBHE policies and NDUS procedures?

Yes

Describe how the project is novel and innovative.

This project is innovative in its approach to EMS education by transitioning the program to a fully DCB-operated model, which enhances sustainability and program development. The program will also use new technologies and AI to simulate patient interactions and assessment to make learning more realistic. The relocation to DCB Downtown provides greater accessibility. Additionally, continued collaboration with Trinity Health ensures hands-on clinical experience with up-to-date equipment, making students job-ready upon graduation. This approach not only meets regional workforce needs but also creates a seamless pathway from education to employment in the EMS sector.

How will the project be sustained after WEIF Grant funding is expended?

After the WEIF grant funding is expended, the project will be sustained through a combination of tuition revenue, program fees, and ongoing partnerships with local healthcare providers like Trinity Health. The transition to a fully DCB-operated model ensures long-term stability, with DCB assuming full responsibility for faculty, equipment, and program administration.

How will the project adapt over time to changing workforce needs and technological changes?

The project will adapt through continuous curriculum updates to align with evolving EMS standards and regional workforce demands. DCB will maintain strong relationships with healthcare partners like Trinity Health to stay informed of industry trends and ensure training reflects the latest practices. Regular program reviews and feedback from students, employers, and accrediting bodies will guide adjustments in training, technology, and equipment.



June 23, 2025

Dr. Steven Shirley
President
Minot State University and
Dakota College at Bottineau
500 University Ave West
Minot, ND 58707

Dear Dr. Shirley:

On behalf of Trinity Health and our seven (7) affiliated critical access hospitals—St. Luke's Hospital (Crosby), Mountrail County Medical Center (Stanley), Presentation Medical Center (Rolla), St. Andrew's Health Center (Bottineau), St. Aloisius Hospital (Harvey), Kenmare Community Hospital, and Tioga Medical Center—I am pleased to offer our enthusiastic support for Dakota College at Bottineau's initiative to assume full ownership and operation of the Trinity Health Paramedic Program. This transition represents a forward-thinking move that will strengthen the program, support regional workforce development, and contribute meaningfully to the long-term vision for a Regional Health Sciences Institute (RHSI) in downtown Minot.

To ensure the successful continuation and growth of this program, Trinity Health will transition the current Program Director role to Dakota College at Bottineau. This strategic alignment allows for dedicated leadership focused exclusively on program quality, expansion, and continued accreditation through the Commission on Accreditation of Allied Health Education Programs (CAAHEP). The use of adjunct instructors will complement this leadership and ensure students receive high-quality instruction across all components of the curriculum.

We are excited that the Paramedic program will be housed within Dakota College at Bottineau's downtown Minot facilities. While some renovation and equipment investments may be required, this relocation places the program in close proximity to other health sciences education offerings and fosters greater interdisciplinary collaboration. Trinity Health remains committed to supporting this transition and will continue to provide robust clinical training opportunities for students—ensuring their readiness to serve in high-demand roles across our network of affiliated hospitals and beyond.

Trinity Health is proud to fully endorse this Workforce Education Innovation Fund proposal. The transition of the Paramedic program and the academic leadership it will bring will not only strengthen our talent pipeline but will also provide new opportunities for faculty to develop short-term, targeted training initiatives that meet the evolving needs of our workforce. This collaboration positions both of our institutions to lead and innovate in healthcare workforce development across our region.

We value our strategic partnership with Dakota College at Bottineau and look forward to building on this shared success as we work together to meet the critical healthcare needs of Minot and the greater region.

Sincerely,

A handwritten signature in blue ink, appearing to read 'John M. Kutch', with a long horizontal flourish extending to the right.

John M. Kutch
President & CEO

Job Posting Analytics

Lightcast Q2 2025 Data Set

June 2025

Parameters

Select Timeframe: Jun 2021 - Jul 2023

Occupations:

Results should include

Code	Description
29-2040	Emergency Medical Technicians and Paramedics

Regions:

Code	Description
38	North Dakota

Minimum Experience Required: Any

Advertised Salary: Include all postings regardless

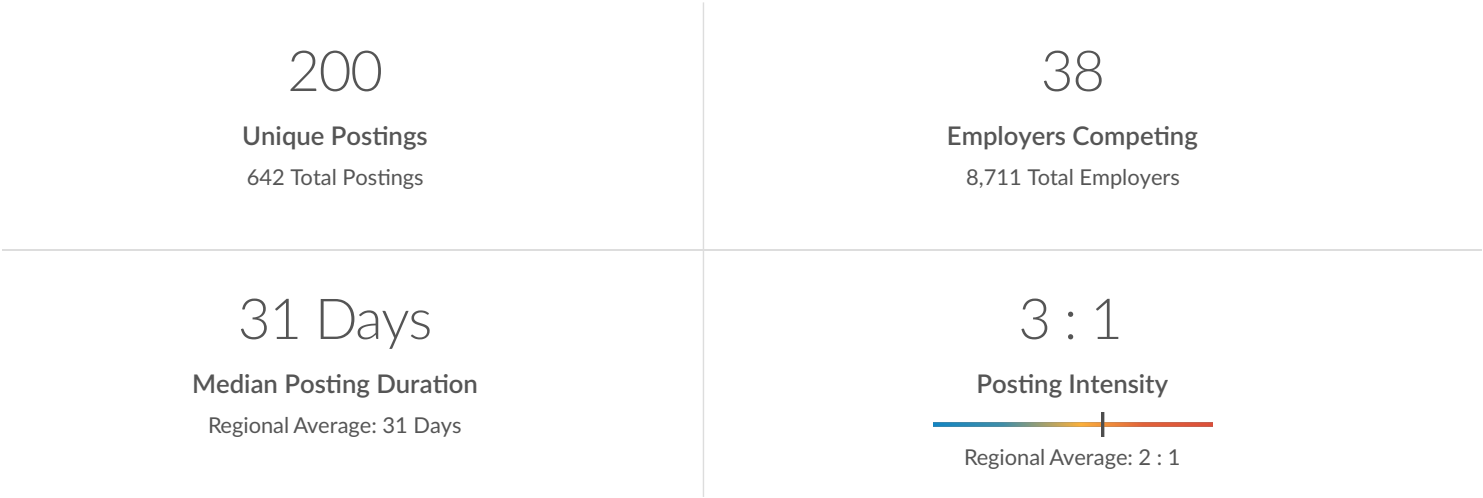
Education Level: Any

Job Type: Include Internships

Keyword Search:

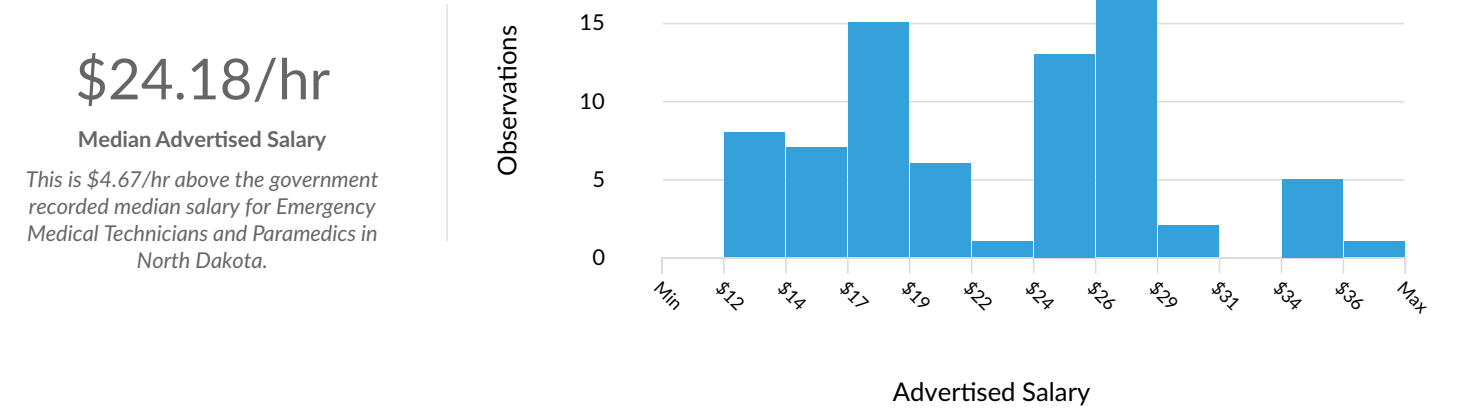
Posting Type: Newly Posted

Job Postings Overview



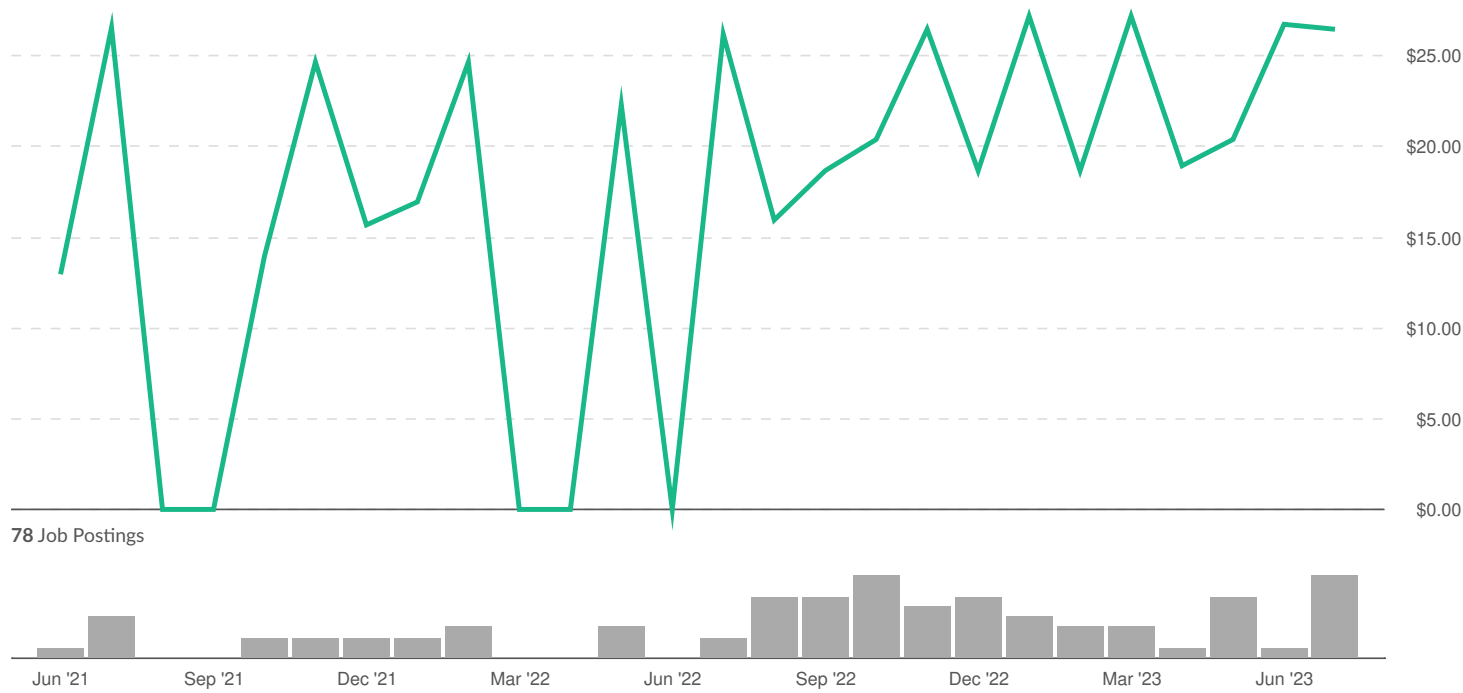
Advertised Salary

There are 78 advertised salary observations (39% of the 200 matching postings).

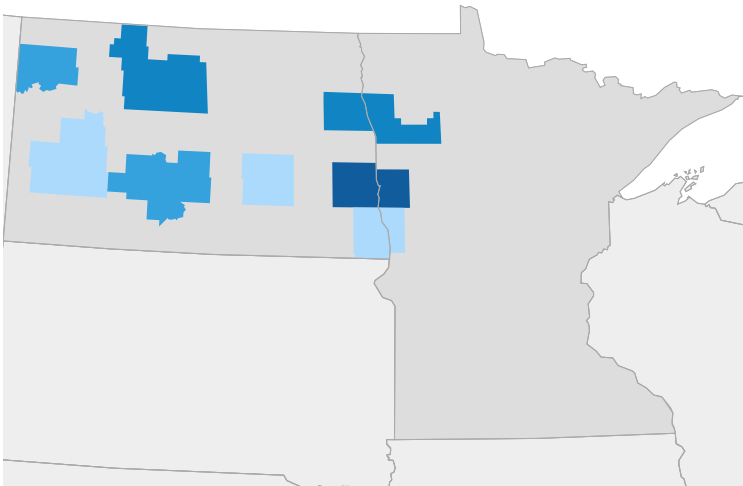


Advertised Salary Trend

▲ 103.6% Jun 2021 - Jul 2023
\$24.18 Median

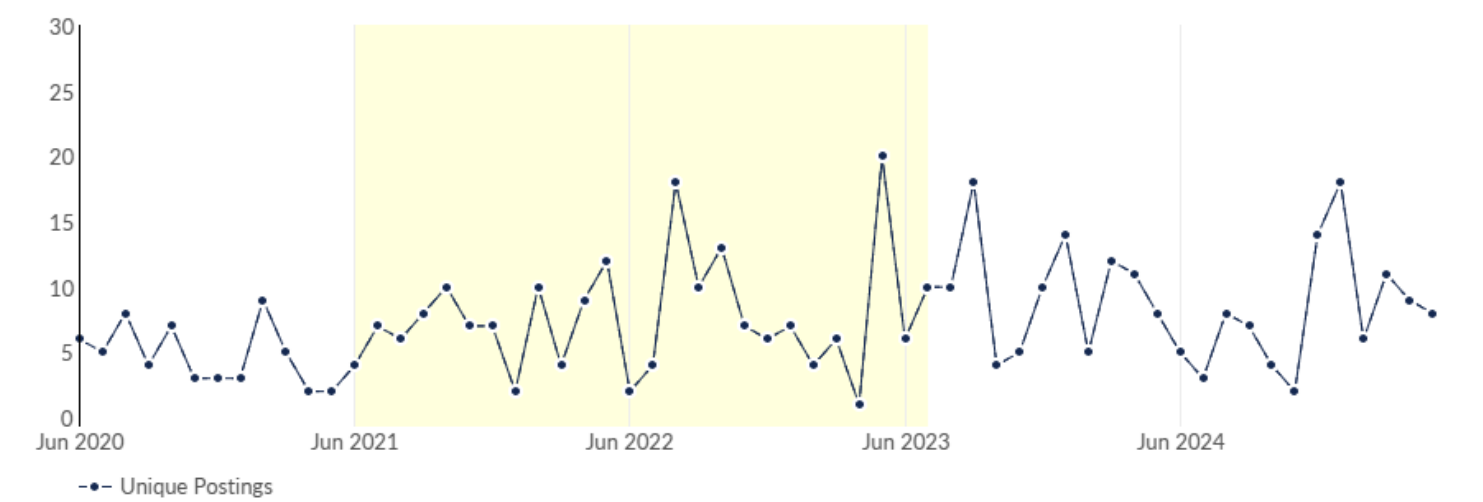


Job Postings Regional Breakdown



MSA	Unique Postings (Jun 2021 - Jul 2023)
Fargo, ND-MN	79
Minot, ND	23
Grand Forks, ND-MN	18
Bismarck, ND	16
Williston, ND	11

Unique Postings Trend



Month	Unique Postings	Posting Intensity
May 2025	8	2 : 1
Apr 2025	9	5 : 1
Mar 2025	11	2 : 1
Feb 2025	6	4 : 1
Jan 2025	18	5 : 1
Dec 2024	14	4 : 1
Nov 2024	2	9 : 1
Oct 2024	4	3 : 1
Sep 2024	7	8 : 1
Aug 2024	8	3 : 1
Jul 2024	3	8 : 1
Jun 2024	5	2 : 1
May 2024	8	4 : 1
Apr 2024	11	2 : 1
Mar 2024	12	5 : 1
Feb 2024	5	7 : 1
Jan 2024	14	6 : 1
Dec 2023	10	3 : 1
Nov 2023	5	6 : 1
Oct 2023	4	2 : 1

Sep 2023	18	3 : 1
Aug 2023	10	3 : 1
Jul 2023	10	5 : 1
Jun 2023	6	3 : 1
May 2023	20	3 : 1
Apr 2023	1	2 : 1
Mar 2023	6	2 : 1
Feb 2023	4	15 : 1
Jan 2023	7	1 : 1
Dec 2022	6	4 : 1
Nov 2022	7	3 : 1
Oct 2022	13	3 : 1
Sep 2022	10	2 : 1
Aug 2022	18	2 : 1
Jul 2022	4	1 : 1
Jun 2022	2	4 : 1
May 2022	12	2 : 1
Apr 2022	9	2 : 1
Mar 2022	4	4 : 1
Feb 2022	10	7 : 1
Jan 2022	2	1 : 1
Dec 2021	7	9 : 1
Nov 2021	7	2 : 1
Oct 2021	10	3 : 1
Sep 2021	8	1 : 1
Aug 2021	6	3 : 1
Jul 2021	7	3 : 1
Jun 2021	4	2 : 1
May 2021	2	1 : 1
Apr 2021	2	3 : 1
Mar 2021	5	4 : 1

Feb 2021	9	1 : 1
Jan 2021	3	2 : 1
Dec 2020	3	2 : 1
Nov 2020	3	2 : 1
Oct 2020	7	2 : 1
Sep 2020	4	2 : 1
Aug 2020	8	2 : 1
Jul 2020	5	3 : 1
Jun 2020	6	2 : 1

Education Breakdown

Education Level	Unique Postings	% of Total
No Education Listed	85	43%
High school or GED	109	55%
Associate's degree	24	12%
Bachelor's degree	7	4%
Master's degree	0	0%
Ph.D. or professional degree	1	1%

Minimum Education Breakdown

Minimum Education Level	Unique Postings (minimum)	Unique Postings (max advertised)	% of Total (minimum)
High school or GED	109	0	55%
Associate's degree	5	17	3%
Bachelor's degree	0	7	0%
Master's degree	0	0	0%
Ph.D. or professional degree	1	0	1%

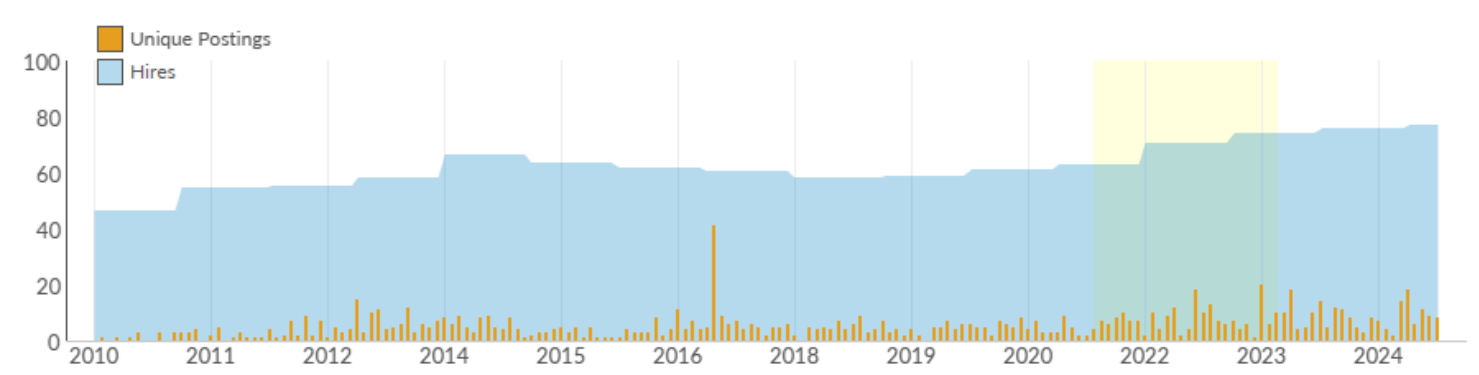
Experience Breakdown

Minimum Experience	Unique Postings	% of Total
No Experience Listed	132	66%
0 - 1 Years	22	11%
2 - 3 Years	44	22%
4 - 6 Years	2	1%
7 - 9 Years	0	0%
10+ Years	0	0%

Job Postings vs. Hires











8	69
Avg. Monthly Postings (Jun 2021 - Jul 2023)	Avg. Monthly Hires (Jun 2021 - Jul 2023)

In an average month, there were 8 newly posted job postings for *Emergency Medical Technicians and Paramedics*, and 69 actually hired. This means there were approximately 9 hires for *Emergency Medical Technicians and Paramedics* for every 1 unique job posting.













Occupation	Avg Monthly Postings (Jun 2021 - Jul 2023)	Avg Monthly Hires (Jun 2021 - Jul 2023)
Emergency Medical Technicians and Paramedics	8	69



Top Companies Posting

	Total/Unique (Jun 2021 - Jul 2023)	Posting Intensity	Median Posting Duration
Sanford Health	311 / 55	6 : 1 	26 days
Trinity Health	37 / 19	2 : 1 	n/a
Altru Health Systems	22 / 13	2 : 1 	n/a
Aston Carter	18 / 10	2 : 1 	29 days
Actalent	22 / 7	3 : 1 	n/a
MedSpeed	52 / 7	7 : 1 	n/a
CommonSpirit Health	14 / 6	2 : 1 	26 days
Heart Of America Medical Center	9 / 5	2 : 1 	39 days
Standing Rock Sioux Tribe	6 / 5	1 : 1 	37 days
Carrington Health Center	12 / 5	2 : 1 	n/a



Top Cities Posting

City	Total/Unique (Jun 2021 - Jul 2023)	Posting Intensity	Median Posting Duration
Fargo, ND	426 / 79	5 : 1 	29 days
Minot, ND	38 / 21	2 : 1 	20 days
Grand Forks, ND	33 / 18	2 : 1 	n/a
Carrington, ND	34 / 17	2 : 1 	4 days
Bismarck, ND	26 / 16	2 : 1 	n/a
Williston, ND	17 / 11	2 : 1 	50 days
Hillsboro, ND	16 / 6	3 : 1 	58 days
Fort Yates, ND	6 / 5	1 : 1 	37 days
Rugby, ND	9 / 5	2 : 1 	39 days
Hettinger, ND	3 / 3	1 : 1 	n/a



Top Posted Occupations

Occupation (SOC)	Total/Unique (Jun 2021 - Jul 2023)	Posting Intensity	Median Posting Duration
Paramedics	252 / 118	2 : 1 	39 days
Emergency Medical Technicians	390 / 82	5 : 1 	29 days











Top Posted Occupations

Occupation (O*NET)	Total/Unique (Jun 2021 - Jul 2023)	Posting Intensity	Median Posting Duration
Paramedics	252 / 118	2 : 1 	39 days
Emergency Medical Technicians	390 / 82	5 : 1 	29 days









Top Posted Occupations

Occupation	Total/Unique (Jun 2021 - Jul 2023)	Posting Intensity	Median Posting Duration
Paramedic	252 / 118	2 : 1 	39 days
Emergency Medical Technician	390 / 82	5 : 1 	29 days

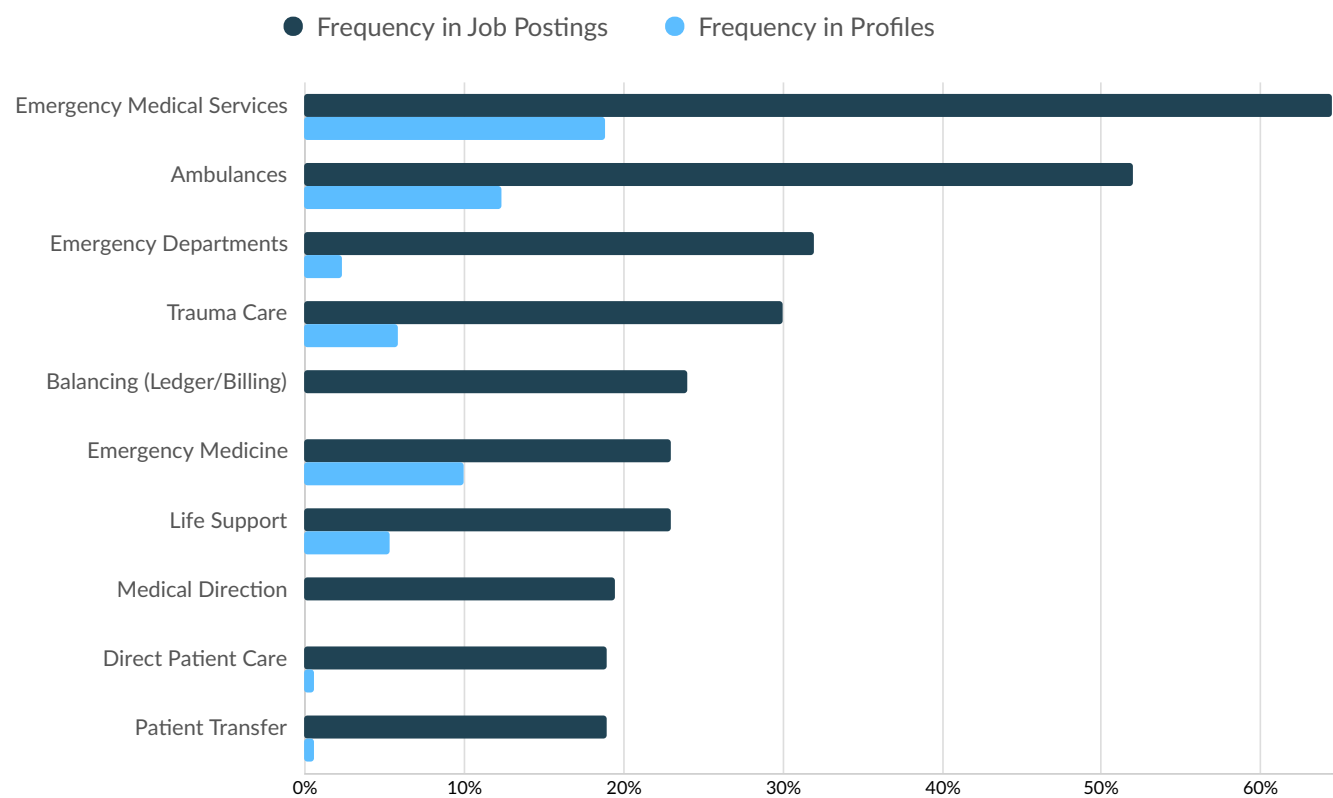
Top Posted Job Titles

	Total/Unique (Jun 2021 - Jul 2023)	Posting Intensity	Median Posting Duration
Paramedics	108 / 57	2 : 1 	26 days
Ambulance Drivers	208 / 30	7 : 1 	58 days
Flight Paramedics	61 / 26	2 : 1 	50 days
Emergency Medical Technicians	37 / 11	3 : 1 	29 days
Emergency Medical Technician Paramedics	42 / 10	4 : 1 	33 days
Medical Representatives	23 / 9	3 : 1 	29 days
Medical Drivers	57 / 8	7 : 1 	n/a
Non-Emergency Medical Transportation Drivers	33 / 4	8 : 1 	26 days
Paramedic Nurses	4 / 3	1 : 1 	n/a
Lead Paramedics	7 / 3	2 : 1 	4 days

Top Industries

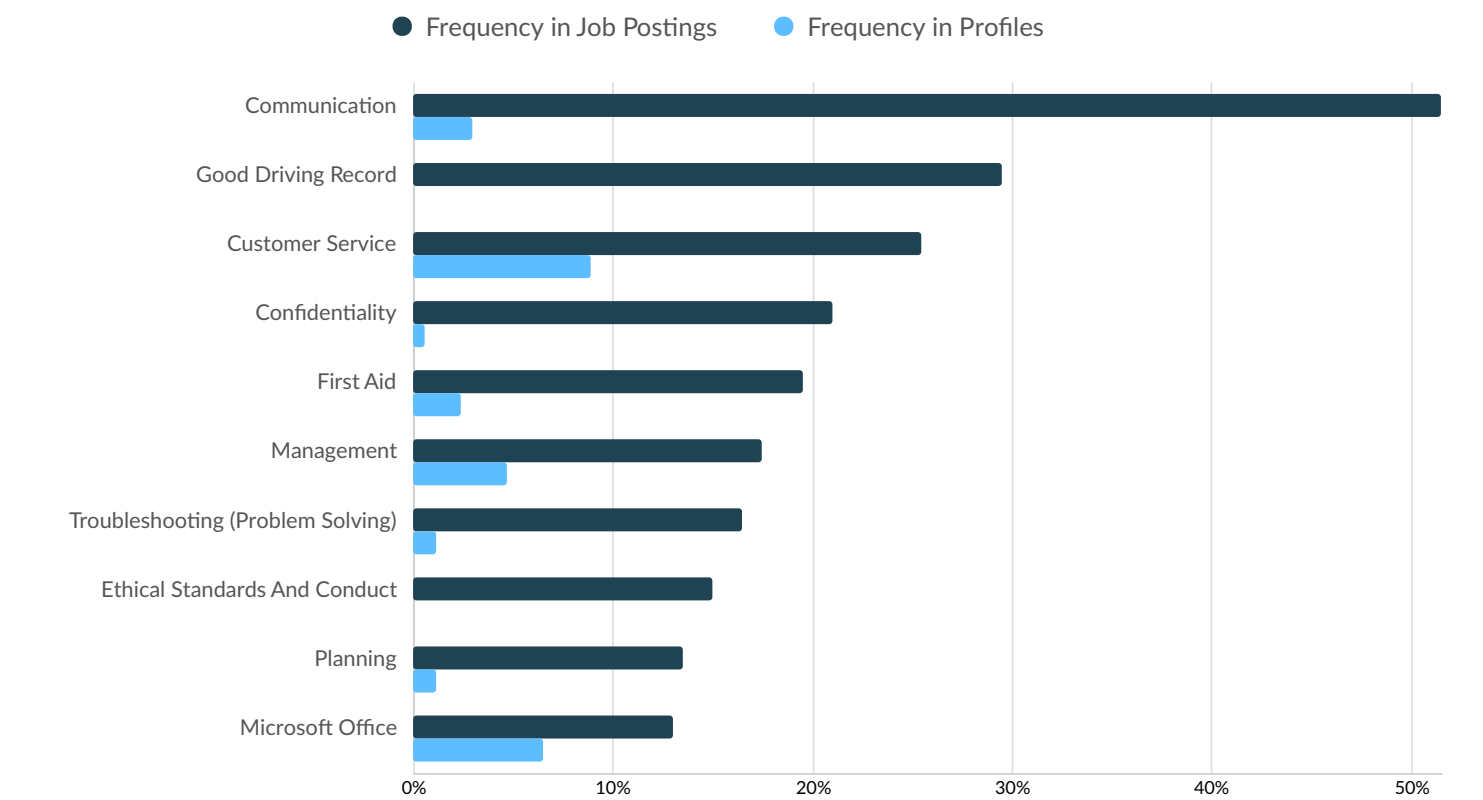
	Total/Unique (Jun 2021 - Jul 2023)	Posting Intensity	Median Posting Duration
General Medical and Surgical Hospitals	399 / 97	4 : 1 	39 days
Employment Placement Agencies	42 / 18	2 : 1 	25 days
Offices of Physicians (except Mental Health Specialists)	25 / 15	2 : 1 	n/a
Ambulance Services	14 / 10	1 : 1 	50 days
Local Messengers and Local Delivery	52 / 7	7 : 1 	n/a
Casino Hotels	6 / 5	1 : 1 	37 days
Solar Electric Power Generation	10 / 4	3 : 1 	n/a
Home Health Care Services	34 / 4	9 : 1 	33 days
All Other Professional, Scientific, and Technical Services	3 / 2	2 : 1 	n/a

Top Specialized Skills



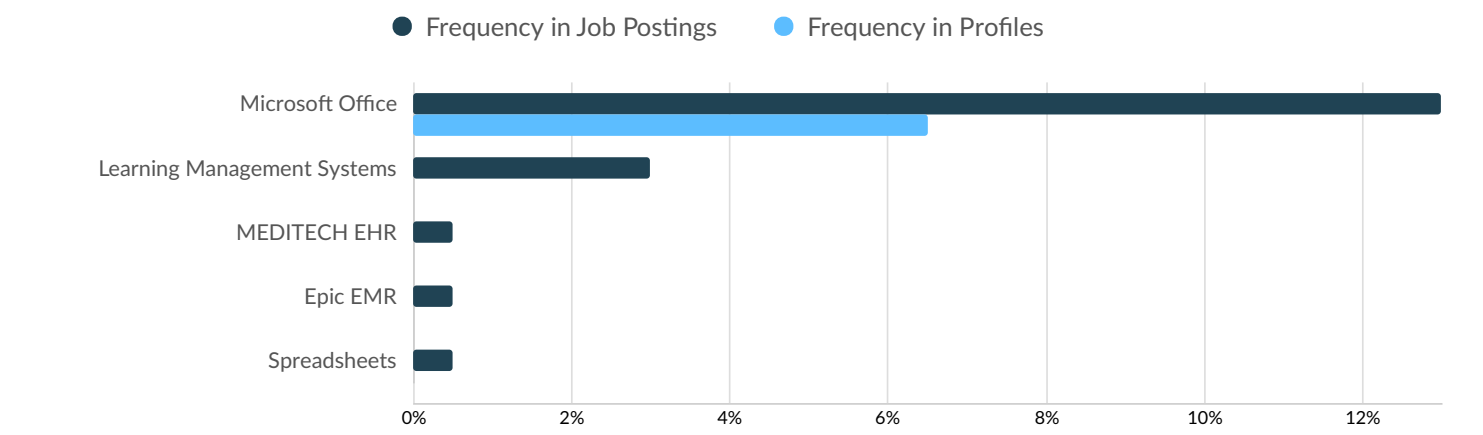
	Postings	% of Total Postings	Profiles	% of Total Profiles	Projected Skill Growth	Skill Growth Relative to Market
Emergency Medical Services	129	65%	32	19%	+9.9%	Growing
Ambulances	104	52%	21	12%	+17.1%	Growing
Emergency Departments	64	32%	4	2%	+9.1%	Growing
Trauma Care	60	30%	10	6%	+11.9%	Growing
Balancing (Ledger/Billing)	48	24%	0	0%	+9.0%	Growing
Emergency Medicine	46	23%	17	10%	+10.8%	Growing
Life Support	46	23%	9	5%	+12.7%	Growing
Medical Direction	39	20%	0	0%	+5.2%	Stable
Direct Patient Care	38	19%	1	1%	+16.6%	Growing
Patient Transfer	38	19%	1	1%	+10.5%	Growing

Top Common Skills



	Postings	% of Total Postings	Profiles	% of Total Profiles	Projected Skill Growth	Skill Growth Relative to Market
Communication	103	52%	5	3%	+3.6%	Lagging
Good Driving Record	59	30%	0	0%	+17.3%	Growing
Customer Service	51	26%	15	9%	+5.2%	Stable
Confidentiality	42	21%	1	1%	0.0%	
First Aid	39	20%	4	2%	+11.3%	Growing
Management	35	18%	8	5%	+5.3%	Stable
Troubleshooting (Problem Solving)	33	17%	2	1%	+19.0%	Growing
Ethical Standards And Conduct	30	15%	0	0%	+18.3%	Growing
Planning	27	14%	2	1%	+10.9%	Growing
Microsoft Office	26	13%	11	7%	+18.5%	Growing

Top Software Skills



	Postings	% of Total Postings	Profiles	% of Total Profiles	Projected Skill Growth	Skill Growth Relative to Market
Microsoft Office	26	13%	11	7%	+18.5%	Growing
Learning Management Systems	6	3%	0	0%	+6.6%	Stable
MEDITECH EHR	1	1%	0	0%	+1.8%	Lagging
Epic EMR	1	1%	0	0%	+16.4%	Growing
Spreadsheets	1	1%	0	0%	+22.2%	Rapidly Growing

Top Qualifications

Postings with Qualification	
Basic Life Support (BLS) Certification	98
Emergency Medical Technician (EMT)	97
Valid Driver's License	85
Paramedic (EMT-P)	67
Advanced Cardiovascular Life Support (ACLS) Certification	58
Pediatric Advanced Life Support (PALS)	53
Nationally Registered Emergency Medical Technician (NREMT)	46
Advanced Life Support	36
Certified First Responder (CFR)	25
Neonatal Resuscitation Program Certification (NRP)	24

Appendix A

Top Posting Sources

Website	Postings on Website (Jun 2021 - Jul 2023)
dejobs.org	52
ndworkforceconnection.com	47
indeed.com	35
healthcaresource.com	25
commonspirit.careers	17
careerbuilder.com	14
careerjet.com	11
monster.com	10
myworkdayjobs.com	10
simplyhired.com	8
disabledperson.com	7
recruitdisability.org	5
adp.com	4
entertimeonline.com	4
jobvite.com	4
recruinternetworks.com	4
thenewstribune.com	4
miracleworkers.com	3
ultipro.com	3
ziprecruiter.com	3
essentiacareers.org	2
getcustomerservicejobs.com	2
latimes.com	2
miamiherald.com	2
sandiegouniontribune.com	2

Appendix B

Sample Postings

S NEW! Flight Paramedic - AirMed | Fargo - Full Time Sanford Health Fargo, ND2 days ago Apply

Link to Live Job Posting: Posting is no longer active

Location: Fargo, ND

O*NET: 29-2043.00

Company: Sanford Health

Job Title: Cargo Specialists

JOB DETAILS

LOCATIONFargo, ND 58126POSTED4 days agoDescriptionCreate Your Career With Us! Sanford Health is one of the largest and fastest-growing not-for-profit health systems in the United States. We're proud to offer many development and advancement opportunities to our nearly 50,000 members of the Sanford Family who are dedicated to the work of health and healing across our broad footprint.

Facility:

Sanford Medical Center Fargo Location:

Fargo, ND Address:

5225 23rd Ave S, Fargo, ND 58104,

USA Shift:

12 Hours -

Varied Shifts Job Schedule:

Full time

Weekly Hours:

36.00

Salary Range:

\$23.62 - \$33.00

Pay Info:

Eligible for new hire sign-on bonus! Job Summary Flight Paramedics provide advanced medical care to patients. Individuals must have the complex knowledge and skills necessary to provide patient care and transportation. Flight Paramedics may need to assist and give direction to additional Emergency Medical Services (EMS) Responders at the scene and/or during transport. Individuals will provide emergency care to patients using the Sanford AirMed helicopter, fixed wing, and ground vehicles to ensure optimal patient care according to standards and the Sanford commitments. Individuals should be familiar with and practice the crew management system and all other safety pre-cautions. Flight Paramedics must be competent in trauma and medical situations and should possess the knowledge and the necessary skills to provide lifesaving interventions in a pre-hospital setting. Individuals will administer emergency care and treatment and determine the nature and

extent of illness or injury and establish priority for required emergency care. Flight Paramedics, based on their assessment will provide emergency care to adults, infants and children, medical and trauma patients. Individuals should be able to determine the appropriate facility that patients should be transported to based on their knowledge of the condition of the patients and the extent of their injuries unless otherwise indicated by medical direction. Individuals should constantly assess the patient while in route to the emergency facility, administers additional care as indicated or given by medical direction. Individual must be able to tolerate various flight conditions including but not limited to altitude physiology, weather conditions, working within a pressurized aircraft and needing knowledge of effects on patient. Flight Paramedics may use equipment included in the medical transport environments. Individuals should observe, record, and report to physician the patient's condition or injury, the treatment provided, and reactions to drugs or treatment at the emergency scene and in transit to the receiving facility staff for purposes of records and diagnostics. Flight Paramedics will need to have good communication with the receiving facility to get medical direction and to provide patient's status and other critical information. Individuals must complete extensive written documentation on patient condition and treatment provided, as well as understand all applicable legal, moral and ethical issues surrounding the emergency medical service. Flight Paramedics should maintain communication with the patient and the family, comforts and reassures patients and be able to demonstrate concern and courtesy while maintaining confidentiality of the patient's information. Individuals will assist with patient care in the receiving facility; lifting and moving patients as required. Flight Paramedics, will have the opportunity to assist within a hospital setting in various areas including but not limited to Trauma codes and critical cases. This will give the Flight Paramedic the opportunity to assist hospital staff as well as provide continual hands on training in certain areas of focus. Physical activities include but not limited to will require considerable use of arms and legs and moving of whole body; such as climbing, lifting, balancing, walking, stooping and handling materials. Flight Paramedics should attend training classes to maintain national certification, state licensure, and keep abreast of new developments in the field, or maintain existing knowledge. Individuals will also assist with teaching and educating other first responders in patient care, air ambulance safety courses, helicopter landing, etc. Must be able to maintain a body weight of no more than 240 pounds. Depending on location of position, work hours will vary depending on patient needs. This may include overtime, call, backup call, nights, days, weekends, and holidays. Qualifications High school diploma or equivalent preferred. Associate degree in paramedic technology or paramedicine preferred. Completion of an accredited Paramedic Training Program required for licensing. Minimum of three years' experience as a paramedic on a busy Advanced Life Support Ambulance service required. Must have a thorough knowledge of paramedic principles, practices and techniques, knowledge of how various equipment such as a monitor or defibrillator work and how to troubleshoot problems that may arise. Must hold national registry status as a Paramedic. Depending on state requirements, individuals may need to have a state license or additional licensures as required, Paramedic (PAR) Certification, National Incident Management Systems (NIMS) Incident Command System (ICS) 100 and 200 completed and continued education hours as mandated by accreditation. Current Basic Life Support (BLS), Trauma training or equivalent. As well as Advanced Certifications that are required within two years of hire dependent upon the individual's role (FP-C, CFRN, CCRN, CTRN, CEN, RNC). If additional certifications are needed, the hospital will assist in obtaining or renewals. Benefits Sanford Health offers an attractive benefits package for qualifying full-time and part-time employees. Depending on eligibility, a variety of benefits include health insurance, dental insurance, vision insurance, life insurance, a 401(k) retirement plan, work/life balance benefits, and a generous time off package to maintain a healthy home-work balance. For more information about Total Rewards, visit <https://sanfordcareers.com/benefits> . Sanford is an EEO/AA Employer M/F/Disability/Vet. If you are an individual with a disability and would like to request an accommodation for help with your online application, please call 1-877-673-0854 or send an email to talent@sanfordhealth.org . Sanford Health has a Drug Free Workplace Policy. An accepted offer will require a drug screen and pre-employment background screening as a condition of employment.

Req Number:

R-0152962

Job Function:

Emergency Medical Services Featured:

No

Lead Paramedics — Sanford Health in Fargo, ND (Jul 2023 - Sep 2023)

Sanford Paramedic Apprentice Level 2	
Link to Live Job Posting: Posting is no longer active	
Location: Fargo, ND	O*NET: 29-2043.00
Company: Sanford Health	Job Title: Lead Paramedics
<div>Sanford Paramedic Apprentice Level 2SANFORD HEALTH</div> <div>FARGO, ND Job Details Job Posted:</div> <div>July 17, 2023 Summary</div> <div><ul style="list-style-type: none">• Create Your Career With Us!• Sanford Health is one of the largest and fastest-growing not-for-profit health systems in the United States. We're proud to offer many development and advancement opportunities to our nearly 50,000 members of the Sanford Family who are dedicated to the work of health and healing across our broad footprint.• Facility:<ul style="list-style-type: none">• Fa Sanford Ambulance• Location:<ul style="list-style-type: none">• Fargo, ND• Address:<ul style="list-style-type: none">• 2215 18th St S, Fargo, ND 58103, USA• Shift:<ul style="list-style-type: none">• Varies• Job Schedule:<ul style="list-style-type: none">• Full time• Weekly Hours:<ul style="list-style-type: none">• 40.00• Salary Range:<ul style="list-style-type: none">• \$15.00 - \$23.00• Job Summary• The Sanford Paramedic Apprentice Level 2 student is going through Sanford Health EMS Education (SHEMSE) program as a paid Sanford employee with full financial assistant and health benefits to support tuition and other expenses while obtaining their National Paramedic license.<div>This is a temporary position for the student to transition from the paramedic education program to full time employment as a licensed</div></div>	

paramedic.

The Sanford Paramedic Apprentice Level 2 student demonstrates competency in trauma and medical situations and possesses the knowledge and the necessary skills to provide lifesaving interventions in a pre-hospital setting. Administers emergency care and treatment and determines the nature and extent of illness or injury and establishes priority for required emergency care. The Sanford Paramedic Apprentice Level 2 is required to maintain enrollment with a Sanford Health EMS Education program and be registered with the approved Technician College. The student will be entering Level 2 of the program after successfully obtaining their National, North Dakota and Minnesota state EMT License.

Depending on the location of the position, the Sanford Paramedic Apprentice level 2 student will have the option to also work hours outside of the classroom and on the truck as an EMT. This may include overtime, call, backup call, nights, days, weekends, and holidays.

The Level 2 student will be expected and required to take and pass the necessary classes and tests to obtain their Paramedic license within the provided timeline in order to be promoted to a full-time working paramedic.

The Sanford Paramedic Level 2 student will be evaluated on the essential functions below. Reports will be made both to the Field Program Director and Clinical Coordinator of the academic institution. Must maintain enrollment with the Sanford Health EMS Education program in the accredited Paramedic Apprenticeship Program to maintain apprenticeship status with Sanford Health.

- Qualifications
- Enrolled in Paramedicine courses with Sanford Health EMS Education/North Dakota State College of Science.

Be a student in good standing with the program. Maintains a passing grade in Paramedic program.

Currently employed as EMT with Sanford Ambulance.

Requires current licensure as an Emergency Medical Technician (EMT) in state(s) of practice and/or possess multi-state licensure privileges as required by position.

Hold national registry status at an EMT level.

Must maintain driver's license and good driving record.

Requires current Basic Life Support (BLS) certification.

- Benefits
- Sanford Health offers an attractive benefits package for qualifying full-time and part-time employees.

Depending on eligibility, a variety of benefits include health insurance, dental insurance, vision insurance, life insurance, a 401(k) retirement plan, work/life balance benefits, and a generous time off package to maintain a healthy home-work balance. For more information about Total Rewards, visit <https://sanfordcareers.com/benefits>. Sanford is an EEO/AA Employer M/F/Disability/Vet. If you are an individual with a disability and would like to request an accommodation for help with your online application, please call 1-877-673-0854 or send an email to talent@sanfordhealth.org. Sanford Health has a Drug Free Workplace Policy. An accepted offer will require a drug screen and pre-employment background screening as a condition of employment.

- Req Number:
- R-0147417
- Job Function:
- Emergency Medical Services
- Featured:

• Featured.

- No

Flight Paramedic (Flex)	
Link to Live Job Posting: Posting is no longer active	
Location: Grand Forks, ND	O*NET: 29-2043.00
Company: Altru Health Systems	Job Title: Flight Paramedics
<p>Flight Paramedic (Flex) page is loadedFlight Paramedic (Flex)locationsGrand Forks, NDtime typePart timeposted onPosted 8 Days Agojob requisition idR2231</p> <p>Location:</p> <p>Altru Care Flight2465 Air Cargo DriveGrand Forks, ND 58203</p> <p>Pay Range:</p> <p>\$21.79 - \$32.68</p> <p>Summary:</p> <p>Schedule:</p> <p>Flex/PRNThe Flight Paramedic provides direct patient care in accordance with established policies, procedures, and patient care guidelines of the organization and works within the established scope of practice of the designated governing EMS body during the transport of patients by fixed-wing airplane and ground ambulance or in accordance with their hospital assignments when not on a transport. The Flight Paramedic maintains the knowledge and skills necessary to provide critical care appropriate for the patients served and facilitates the coordination of patient care with our partners in the region.</p> <p>Essential Job Functions:</p> <p>Responds to requests for and conducts patient transports in fixed-wing aircraft and ground ambulances. Provides high quality critical care in accordance with the patient care guidelines established by the organization. Demonstrates ability to function as a member of the flight crew and ensure the safety of the crew, patients, and other passengers during transport.Identifies the early warning signs of a change in a patient's condition and responds appropriately to a deteriorating patient, including contacting responsible clinicians as indicated by standard operating procedure. Assists with or institutes emergency measures for sudden adverse developments in patient conditions.Transports patients to all internal departments at Altru Hospital, as well as to Fargo, Minneapolis, and Rochester and is a member of the Neonatal Intensive Care Unit (NICU) transport team. Assesses, intervenes, and reassesses the patient's condition promptly and takes appropriate action in accordance with patient care guidelines.Works in the Emergency Room assisting the RNs with triage and critical patient care. Performs and documents assessments according guidelines and/or as patient condition requires, i.e., vital signs, intake and output, IV's, blood sugars, room/caregiver assignment, etc. and ensures patient is properly identified. Works as a cohesive team with First Responders. Creates a smooth transition of care. Provides feedback and follow-up to First Responders as necessary. Provides coverage for various special functions throughout the Grand Forks community and surrounding areas, i.e., races, sporting events, city sponsored events. Serves as a safety officer and patient care resource (within applicable scope of practice and training) for specialty teams conducting transport of neonatal patients by fixed-wing aircraft and ground ambulance.Serve as a preceptor to new employees and students.Performs other duties as assigned or needed to meet the needs of the department/organization.CertificationsParamedic National Registry of Emergency Medical Technicians Prior to Start Date HR Primary SourcesParamedic North Dakota Board of Health Prior to Start Date HR Primary SourcesParamedic Minnesota Emergency Medical Services Regulatory Board Prior to Start Date HR Primary SourcesParamedic Montana Board of Medical Examiners Within 3 Months of</p>	

Start Date | HR Primary SourcesBLS , ACLS and PALS Certified | American Heart Association (AHA) | Prior to Start Date | Learning Management SystemDriver's License with Acceptable Driving Record | Driver's License - Current State Licensed | Prior to Start Date | HR Primary SourcesNeonatal Resuscitation Program (NRP) | Altru Health System | Within 12 Months of Start Date | HR Primary SourcesParamedic | South Dakota Board of Medical Examiners | Preferred | HR Primary SourcesNotesAdvanced Provider International Trauma Life Support (ITLS), Prehospital Trauma Life Support (PHTLS), Transport Professional Advanced Trauma Course (TPATC), Advanced Trauma Life Support (ATLS), or other Commission on Accreditation of Medical Transport Systems (CAMTS) Approved Advanced Trauma Course prior to Start Date.Flight Paramedic Certification (FP-C) or Critical Care Paramedic Certification (CCP-C) required within 24 months of start date.

Physical Demands :

Sit:

Occasionally (5-33%)

Stand:

Frequently (34-66%)

Walk:

Frequently (34-66%)

Stoop/Bend:

Frequently (34-66%)

Reach:

Frequently (34-66%)

Crawl:

Occasionally (5-33%)

Squat/Crouch/Kneel:

Frequently (34-66%)

Twist:

Frequently (34-66%)

Handle/Finger/Feel:

Continuously (67-100%)

See:

Continuously (67-100%)

Hear:

Continuously (67-100%)

Weight Demands:

Lift -Floor to

Waist Level:

Heavy (40-100 pounds)

Carry:

Heavy (40-100 pounds)

Push/Pull:

Heavy (40-100 pounds)

Slide/Transfer:

Heavy (40-100 pounds)

Working Conditions:

Indoor:

Frequently (34-66%)

Outdoor:

Frequently (34-66%)

Extreme Temperature:

Not Applicable

Driving Requirement Definitions:

Professional Drivers:

Persons who drive as their main responsibility OR transport passengers or hazardous materials.

Frequent Drivers:

Persons whose main responsibility is not driving, but drive daily or almost daily.

Occasional Drivers:

Persons who drive from once per month to as frequently as once per week.

Infrequent Drivers:

Persons who are generally not expected to drive.Driving Requirement for this position: Occasional Driver

Reference ID:

R2231Similar Jobs (2)Respiratory Therapist (FLEX)locationsGrand Forks, NDtime typePart timeposted onPosted 30+ Days AgoFlexi RN-Ortho Joint Replacement-1st FI ASC (24/7)locationsGrand Forks, NDtime typePart timeposted onPosted 30+ Days AgoAbout UsJoin our team. We

care for one another. Do what you love. Make a difference. Join our team of health professionals and support staff committed to caring for the region for more than 130 years. At Altru Health System, we are serious about providing an exceptional patient experience and positively impacting the communities we serve. Our physician led, community-owned, not-for-profit health system serves over 225,000 residents in northeast North Dakota and northwest Minnesota. We are a proud member of the Mayo Clinic Care Network. Our employees are knowledgeable, dedicated, hardworking, trustworthy and self disciplined. Equal Opportunity Altru Health System is an Equal Opportunity Employer. Learn more or to request a copy of our Equal Employment Opportunity and Eligibility policy and Affirmative Action Plan at no charge, please contact Altru's Human Resources Department at or 701.780.5107. Additionally the following posters are available through the

Department of Labor:

EEO is the Law Poster & EEO is the Law Poster Supplement Altru Health System participates in E-Verify and may provide the Social Security Administration and, if necessary, the Department of Homeland Security with information from each new employee's Form I-9 to confirm work authorization. Reasonable Accommodations Altru Health System provides reasonable accommodations to individuals with disabilities to increase opportunities and eliminate barriers to employment. If you need a reasonable accommodation in the application process to access job postings, to apply for a job, for a job interview, for pre-employment testing, or with the onboarding process, please contact Altru's Human Resources Department at or 701.780.5107.

Paramedic - Occ Med Valley City - Full Time	
Link to Live Job Posting: Posting is no longer active	
Location: Valley City, ND	O*NET: 29-2043.00
Company: Sanford Health	Job Title: Paramedics
<p>Paramedic - Occ Med Valley City - Full Time Sanford Health Valley City, ND Permanent Full-time 19 hours ago Create Your Career With Us! Sanford Health is one of the largest and fastest-growing not-for-profit health systems in the United States. We're proud to offer many development and advancement opportunities to our nearly 50,000 members of the Sanford Family who are dedicated to the work of health and healing across our broad footprint.</p> <p>Facility:</p> <p>Valley City Clinic Location:</p> <p>Valley City, ND Address:</p> <p>520 Chautauqua Blvd, Valley City, ND 58072,</p> <p>USA Shift:</p> <p>Day Job Schedule:</p> <p>Full time</p> <p>Weekly Hours:</p> <p>40.00</p> <p>Salary Range:</p> <p>\$19.00 - \$30.50 Job Summary Paramedics demonstrate competency in trauma and medical situations and possess the knowledge and the necessary skills to provide lifesaving interventions in a pre-hospital setting. Administer emergency care and treatment and determine the nature and extent of illness or injury and establishes priority for required emergency care. Paramedics provide advanced medical care to patients. Complex knowledge and skills necessary to provide patient care and transportation. Paramedics may need to assist and give direction to additional Emergency Medical Services (EMS) Responders at the scene and/or during transport. Paramedics, based on their assessment, will provide emergency care to adults, infants and children, medical and trauma patients. Determine the appropriate facility that patients should be transported to based on their knowledge of the condition of the patients and the extent of their injuries unless otherwise indicated by medical direction. Constantly assess the patient while in route to the emergency facility, administers additional care as indicated or given by medical direction. Paramedics may use equipment included in the medical transport environments. Observe, record, and report to physician the patient's condition or injury, the treatment provided, and reactions to drugs or treatment at the emergency scene and in transit to the receiving facility staff for purposes of records and diagnostics. Paramedics will demonstrate good communication with the receiving facility to get medical direction and to provide patient's status and other critical information. Complete extensive written documentation on patient condition and treatment provided, as well as understand all applicable legal, moral and ethical issues surrounding the emergency medical service. Paramedics maintain communication with the patient and the family, comforts and reassures patients and be able to demonstrate concern and courtesy while maintaining confidentiality of the patient's information. Assist with patient care in the receiving</p>	

facility; lifting and moving patients as required. Physical activities include but not limited to will require considerable use of arms and legs and moving of whole body; such as climbing, lifting, balancing, walking, stooping and handling materials. Attend training classes to maintain national certification, state licensure, and keep abreast of new developments in the field, or maintain existing knowledge. Depending on location of position, work hours will vary depending on patient needs. This may include overtime, call, backup call, nights, days, weekends, and holidays. Qualifications High school diploma or equivalent required; Associates Degree in Paramedic Technology or Paramedicine preferred. Completion of an accredited Paramedic Training Program required for licensing. Thorough knowledge of paramedic principles, practices and techniques, knowledge of how various equipment, such as a monitor or defibrillator, work and how to troubleshoot problems that may arise. Hold national registry status at a Paramedic level. Additional training provided/workshops and staff meetings are to be attended as per policy. Depending on state requirements, individuals may need to have a state license. Additional licensures as required depending upon state; Paramedic (PAR) Certification, National Incident Management Systems (NIMS) Incident Command System (ICS)100, 200, 700, and 800 completed and continued education hour's as mandated by accreditation. Current Basic Life Support (BLS), Prehospital Trauma Life Support (PHTLS) or equivalent, advanced version for paramedics, International Trauma Life Support (ITLS), Advanced Cardiac Life Support (ACLS), Pediatric Advanced Life Support (PALS), and Neonatal Resuscitation Program (NRP) preferred depending on location. Must possess a valid Driver's License and have a good driving record. Benefits Sanford Health offers an attractive benefits package for qualifying full-time and part-time employees. Depending on eligibility, a variety of benefits include health insurance, dental insurance, vision insurance, life insurance, a 401(k) retirement plan, work/life balance benefits, and a generous time off package to maintain a healthy home-work balance. For more information about Total Rewards, visit <https://sanfordcareers.com/benefits> . Sanford is an EEO/AA Employer M/F/Disability/Vet. If you are an individual with a disability and would like to request an accommodation for help with your online application, please call 1-877-673-0854 or send an email to talent@sanfordhealth.org . Sanford Health has a Drug Free Workplace Policy. An accepted offer will require a drug screen and pre-employment background screening as a condition of employment.

Req Number:

R-0153560

Job Function:

Emergency Medical Services Featured:

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View similar jobs:

Save CDR Maguire Salt Lake City, UT Job Description:

CDR Health Care Inc. is seeking qualified Paramedics (PMDs) interested in joining our reserve pool. This opportunity offers the chance to be called to work in yo 2 months ago more...

View similar jobs:

Save CDR Maguire Salt Lake City, UT CDR Health Care Inc. is seeking qualified Paramedics (PMDs) interested in joining our reserve pool. This opportunity offers the chance to be called to work in your locality on an a 2 months ago Apply easily more...

View similar jobs:

Flight Paramedics — Sanford Health in Fargo, ND (Jul 2023 - Aug 2023)

Flight Paramedic - AirMed Fargo - Full Time	
Link to Live Job Posting: Posting is no longer active	
Location: Fargo, ND	O*NET: 29-2043.00
Company: Sanford Health	Job Title: Flight Paramedics
<p>Flight Paramedic - AirMed Fargo - Full Time Sanford Health Fargo, ND Permanent Full-time 18 hours ago Create Your Career With Us! Sanford Health is one of the largest and fastest-growing not-for-profit health systems in the United States. We're proud to offer many development and advancement opportunities to our nearly 50,000 members of the Sanford Family who are dedicated to the work of health and healing across our broad footprint.</p> <p>Facility:</p> <p>Sanford Medical Center Fargo Location:</p> <p>Fargo, ND Address:</p> <p>5225 23rd Ave S, Fargo, ND 58104,</p> <p>USA Shift:</p> <p>12 Hours -</p> <p>Varied Shifts Job Schedule:</p> <p>Full time</p> <p>Weekly Hours:</p> <p>36.00</p> <p>Salary Range:</p> <p>\$23.62 - \$33.00</p> <p>Pay Info:</p> <p>Eligible for new hire sign-on bonus! Job Summary Flight Paramedics provide advanced medical care to patients. Individuals must have the complex knowledge and skills necessary to provide patient care and transportation. Flight Paramedics may need to assist and give direction to additional Emergency Medical Services (EMS) Responders at the scene and/or during transport. Individuals will provide emergency care to patients using the Sanford AirMed helicopter, fixed wing, and ground vehicles to ensure optimal patient care according to standards and the Sanford commitments. Individuals should be familiar with and practice the crew management system and all other safety pre-cautions. Flight Paramedics must be competent in trauma and medical situations and should possess the knowledge and the necessary skills to provide lifesaving interventions in a pre-hospital setting. Individuals will administer emergency care and treatment and determine the nature and extent of illness or injury and establish priority for required emergency care. Flight Paramedics, based on their assessment will provide emergency care to adults, infants and children, medical and trauma patients. Individuals should be able to determine the appropriate facility that patients should be transported to based on their knowledge of the condition of the patients and the extent of their injuries unless</p>	

otherwise indicated by medical direction. Individuals should constantly assess the patient while in route to the emergency facility, administer additional care as indicated or given by medical direction. Individual must be able to tolerate various flight conditions including but not limited to altitude physiology, weather conditions, working within a pressurized aircraft and needing knowledge of effects on patient. Flight Paramedics may use equipment included in the medical transport environments. Individuals should observe, record, and report to physician the patient's condition or injury, the treatment provided, and reactions to drugs or treatment at the emergency scene and in transit to the receiving facility staff for purposes of records and diagnostics. Flight Paramedics will need to have good communication with the receiving facility to get medical direction and to provide patient's status and other critical information. Individuals must complete extensive written documentation on patient condition and treatment provided, as well as understand all applicable legal, moral and ethical issues surrounding the emergency medical service. Flight Paramedics should maintain communication with the patient and the family, comfort and reassure patients and be able to demonstrate concern and courtesy while maintaining confidentiality of the patient's information. Individuals will assist with patient care in the receiving facility; lifting and moving patients as required. Flight Paramedics, will have the opportunity to assist within a hospital setting in various areas including but not limited to Trauma codes and critical cases. This will give the Flight Paramedic the opportunity to assist hospital staff as well as provide continual hands on training in certain areas of focus. Physical activities include but not limited to will require considerable use of arms and legs and moving of whole body; such as climbing, lifting, balancing, walking, stooping and handling materials. Flight Paramedics should attend training classes to maintain national certification, state licensure, and keep abreast of new developments in the field, or maintain existing knowledge. Individuals will also assist with teaching and educating other first responders in patient care, air ambulance safety courses, helicopter landing, etc. Must be able to maintain a body weight of no more than 240 pounds. Depending on location of position, work hours will vary depending on patient needs. This may include overtime, call, backup call, nights, days, weekends, and holidays. Qualifications High school diploma or equivalent preferred. Associate degree in paramedic technology or paramedicine preferred. Completion of an accredited Paramedic Training Program required for licensing. Minimum of three years' experience as a paramedic on a busy Advanced Life Support Ambulance service required. Must have a thorough knowledge of paramedic principles, practices and techniques, knowledge of how various equipment such as a monitor or defibrillator work and how to troubleshoot problems that may arise. Must hold national registry status as a Paramedic. Depending on state requirements, individuals may need to have a state license or additional licensures as required, Paramedic (PAR) Certification, National Incident Management Systems (NIMS) Incident Command System (ICS) 100 and 200 completed and continued education hours as mandated by accreditation. Current Basic Life Support (BLS), Trauma training or equivalent. As well as Advanced Certifications that are required within two years of hire dependent upon the individual's role (FP-C, CFRN, CCRN, CTRN, CEN, RNC). If additional certifications are needed, the hospital will assist in obtaining or renewals. Benefits Sanford Health offers an attractive benefits package for qualifying full-time and part-time employees. Depending on eligibility, a variety of benefits include health insurance, dental insurance, vision insurance, life insurance, a 401(k) retirement plan, work/life balance benefits, and a generous time off package to maintain a healthy home-work balance. For more information about Total Rewards, visit <https://sanfordcareers.com/benefits> . Sanford is an EEO/AA Employer M/F/Disability/Vet. If you are an individual with a disability and would like to request an accommodation for help with your online application, please call 1-877-673-0854 or send an email to talent@sanfordhealth.org . Sanford Health has a Drug Free Workplace Policy. An accepted offer will require a drug screen and pre-employment background screening as a condition of employment.

Req Number:

R-0152962

Job Function:

Emergency Medical Services Featured:

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Appendix C - Data Sources and Calculations

Lightcast Job Postings

Job postings are collected from various sources and processed/enriched to provide information such as standardized company name, occupation, skills, and geography.

Occupation Data

Lightcast occupation employment data are based on final Lightcast industry data and final Lightcast staffing patterns. Wage estimates are based on Occupational Employment Statistics (QCEW and Non-QCEW Employees classes of worker) and the American Community Survey (Self-Employed and Extended Proprietors). Occupational wage estimates are also affected by county-level Lightcast earnings by industry.

State Data Sources

This report uses state data from the following agencies: North Dakota Job Service



1020 20th Avenue SW
PO Box 940
Minot, North Dakota 58702-0940

Telephone: 701.852.6000
Fax: 701.838.2488
www.minotchamberedc.com
minot@minotchamberedc.com

June 25, 2025

Dr. Carmen Simone
Campus Dean/CEO
Dakota College at Bottineau
105 Simrall Blvd
Bottineau, ND 58318

RE: Surgical, Tech, Paramedic, and Medical Lab Tech Programs

Dr. Simone,

Our mission at the Minot Area Chamber EDC (MACEDC) is to advocate for and invest in business activity by being a collaborative partner in the community, focused on improving quality of life for all. MACEDC supports key initiatives that build and strengthen our economy and is grateful to be a strategic partner of the Minot State University and Dakota College at Bottineau.

One of MACEDC's key pillars of focus is workforce development, and we believe that the addition of the three proposed academic programs (Surgical Technology, Paramedic, and Medical Laboratory Technology) would not only expand DCB's offerings but would develop skilled medical professionals to enter the workforce and help fill crucial positions throughout the region and state. These programs would help expand a Regional Health Sciences Institute (RHSI) in downtown Minot, providing a hands-on clinic experience for the students and contributing to the long-term vision of an RHSI.

We wholeheartedly support Dakota College at Bottineau's efforts to develop the three new programs and look forward to continued success in meeting regional healthcare and workforce needs.

Sincerely,

Brekka Kramer
President | CEO
Minot Area Chamber EDC



2025-2027 Application for Workforce Education Innovation Grant Funds

Application Number

6

Institution

Dakota College at Bottineau

Applicant Name.

Kayla O'Toole

Applicant Title.

Associate Dean for Academic Affairs

Applicant Department.

Academic Affairs

Project Title.

Expanding Healthcare Training in Minot: Developing a Medical Laboratory Technician AAS Program

Briefly describe the proposed project.

This project aims to establish a new Medical Laboratory Technician AAS program at Trinity Health Center West in Minot, in collaboration with Trinity Health and Minot State University. The program will provide students with comprehensive training in medical laboratory technology. As a potential pathway program for Minot State University's BS in Medical Laboratory Science, it will address regional workforce needs by offering hands-on, locally focused education to prepare students for careers in healthcare, specifically in the Minot area and surrounding communities.

Does the proposal meet the statutory guidance of N.D.C.C. 15-10-75?

Yes

Indicate which statutory objective this proposal will advance (as required by N.D.C.C. 15-10-75).

Curriculum Development; Equipment & technology purchases; Facility modifications and equipment installation; Hiring and training new and existing instructors; Education program promotion; Enhancement of postsecondary partnerships with primary and secondary schools

Briefly describe how the funds will advance the objectives.

Funds will be used to develop and implement a comprehensive Medical Laboratory Technician AAS program at Trinity Health Center West in Minot contributing to the Regional Health Sciences Institute initiative. These funds will support curriculum development, purchase necessary equipment, and modify the facility to provide hands-on, real-world training. Funds will also be used to hire and train qualified instructors and promote the program to prospective students and local healthcare providers. Additionally, the project will strengthen partnerships with local primary and secondary schools to create pathways for students into healthcare careers, addressing regional workforce needs and ensuring long-term program sustainability.

When will the proposed project be ready to admit students?

Fall 2026

Amount of funding requested.

\$435,000

What other sources of funding or resources support the proposed project?

Additional financial support will come from tuition revenue and program-specific fees. The program will be located in the existing Trinity Health Center West building, which is currently leased by Dakota College at Bottineau, eliminating the need for new construction or major capital investment. Furthermore, existing partnerships, particularly with Trinity Health, will provide access to donated equipment, helping to reduce startup and operational costs.

Which identified workforce development need will this project address?

According to Job Service North Dakota, healthcare remains one of the state's highest-demand sectors. Among the occupations identified as high need are Clinical Laboratory Technicians. This project directly addresses that workforce gap by expanding educational capacity and training opportunities for future professionals in the region.

What are the project's metrics for success? How will these metrics be achieved?

Success will be measured through several key metrics:

Enrollment Growth and Stability – This is a new program, so a focus will be given to promotion and recruiting and initial cohort of students. Then, an increase in enrollment will serve as a measurable indicator of growth.

Program Completion Rates – Completion rates will be closely tracked to establish and achieve targeted benchmarks for student success.

Certification Pass Rates – Success will be demonstrated by an increase in the number of students passing the national certification exam.

Job Placement Rates – Employment outcomes will be monitored, with the goal of graduates securing related positions within six months of program completion.

These outcomes will be achieved through targeted program promotion, strengthened partnerships with healthcare providers and local schools, modernized training equipment, and increased instructional capacity.

How does the project support student retention in North Dakota to meet the needs of local industries?

The proposed Medical Laboratory Technician AAS program is designed to directly support student retention by aligning educational opportunities with the specific workforce needs of local healthcare industries in North Dakota. By offering a locally focused, hands-on training experience in Minot, students will gain the skills necessary to meet the growing demand for healthcare professionals in both urban and rural areas. This regional focus not only increases the likelihood that students will remain in North Dakota for their careers but also strengthens the connections to local employers like Trinity Health and other healthcare providers who are invested in hiring graduates from the program. Additionally, the program's pathway to Minot State University's BS in Medical Laboratory Science provides students with a clear educational trajectory, encouraging them to stay in-state and continue their studies, thereby further addressing the long-term workforce needs of North Dakota's healthcare sector.

How are the students supported by this project prepared to enter the workforce with minimal additional on-the-job training?

Students in the Medical Laboratory Technician AAS program will be prepared to enter the workforce with minimal additional on-the-job training through a combination of comprehensive hands-on training and curriculum aligned with the specific needs of local healthcare providers. The program's real-world clinical training, provided in collaboration with regional healthcare employers like Trinity Health, ensures that students are familiar with industry-standard equipment and procedures. Additionally, the program will integrate current technologies and medical practices, providing students with up-to-date skills that directly align with the demands of local healthcare facilities. This practical, regionally tailored approach allows students to graduate ready to step into full-time roles with the confidence and competency needed to succeed immediately in the workforce.

Are there private sector partners in creating/offering the project?

Yes, Trinity Health is a key private sector partner in this project. They will contribute by providing essential medical equipment, supplies, and clinical placement opportunities for students. Their collaboration ensures that students receive hands-on training with real-world tools and technologies used in healthcare settings. Additionally, Trinity Health's involvement helps ensure that the curriculum is aligned with the specific workforce needs of local healthcare providers, preparing students to seamlessly transition into roles within the organization and other regional healthcare facilities. Their support strengthens the program's practical training component and enhances its relevance to the Minot area and surrounding communities.

Is this project offered in partnership with another NDUS institution?

No, however this program would serve as a potential pathway to the BS in Medical Laboratory Science at Minot State

Does this project support a program already approved per SBHE policies and NDUS procedures?

No

If not previously approved, is the project unique in the NDUS system?

While similar programs exist within the NDUS system, the Medical Laboratory Technician AAS program is uniquely tailored to meet the specific healthcare workforce needs of the Minot region and surrounding rural communities. The program will provide hands-on, locally focused training, with strong partnerships with regional healthcare providers like Trinity Health. Additionally, this program will serve as a pathway for Minot State University's BS in Medical Laboratory Science, creating a seamless educational pathway for students in the area. The local workforce demand, especially in rural communities, necessitates a program specifically designed for Minot to ensure that students gain practical experience in the unique healthcare challenges of the region. Thus, the program is not just a duplication but a strategic response to a localized need, ensuring that the Minot area has a skilled workforce ready to serve its healthcare providers.

Describe how the project is novel and innovative.

The proposed Medical Laboratory Technician AAS program is novel and innovative in its focus on regional workforce development and combining medical laboratory training. This comprehensive approach addresses the growing demand for healthcare professionals in Minot and surrounding rural areas. The program is designed in close collaboration with local healthcare providers like Trinity Health, ensuring that students receive hands-on, industry-relevant training that aligns with real-world needs. By offering this program at Trinity Health Center West, the collaboration with Minot State University creates a seamless educational pipeline, allowing students to easily transition into advanced degrees

like the BS in Medical Laboratory Science. The incorporation of both entry-level and specialized healthcare certifications makes this program unique, equipping students with a broader skill set and increasing their employability in a variety of healthcare settings.

How will the project be sustained after WEIF Grant funding is expended?

After the WEIF grant funding is expended, the project will be sustained through a combination of tuition revenue, program fees, and ongoing partnerships with local healthcare providers like Trinity Health.

How will the project adapt over time to changing workforce needs and technological changes?

The project will adapt to changing workforce needs and technological advancements by maintaining close partnerships with local healthcare providers, such as Trinity Health, to ensure the curriculum stays aligned with industry requirements. Regular feedback from these partners will guide updates to both the curriculum and training methodologies, ensuring that students are taught the latest techniques and technologies used in the medical laboratory field. Additionally, the program will incorporate ongoing professional development for instructors to stay current with emerging technologies and practices.



June 24, 2025

Dr. Carmen Simone
Campus Dean / CEO
Dakota College of Bottineau
105 Simrall Blvd
Bottineau, ND 58318

Dear Dr. Simone:

On behalf of Trinity Health and its seven (7) affiliate critical access hospitals: St. Luke's Hospital (Crosby), Mountrail County Medical Center (Stanley), Presentation Medical Center (Rolla), St. Andrew's Health Center (Bottineau), St. Aloisius Hospital (Harvey), Kenmare Hospital, and Tioga Medical Center, I am pleased to formally endorse the efforts of Dakota College at Bottineau in developing a program in Medical Laboratory Technology. This proposed offering would become an important component of the envisioned Regional Health Sciences Institute in downtown Minot.

This program requires Dakota College at Bottineau to hire a director, who will ultimately become responsible for the planning and implementation of all aspects of this effort, including curriculum development. We would encourage a ladder approach, with phlebotomy embedded into the overall programmatic framework, perhaps as a stand-alone certificate. Designed properly, the two-year program graduates would be prepared for further study and promotion within the field. Submission of the Medical Laboratory Technology program for specialized programmatic accreditation through the National Accrediting Agency for Clinical Laboratory Science (NAACLS) would be anticipated.

The physical space for teaching is envisioned within the Health Center West facility in downtown Minot. It is our understanding that this may necessitate minor renovation and procurement of equipment. As the Regional Health Sciences Institute is developed in Minot, synergy among the specialties being taught would grow. Ultimately, students in each program would learn how the components of a comprehensive team function in the health care setting. As this program is developed, Trinity Health commits to providing guidance and necessary resources for clinical experiences for students.

Trinity Health is in full support of this Workforce Education Innovation Fund proposal for a Medical Laboratory Technology program at Dakota College at Bottineau. We look forward to employing many of these graduates throughout our healthcare network and appreciate the creation of a pipeline of specially trained individuals to support our enterprise.

We are proud to align with Dakota College at Bottineau as a strategic partner. We look forward to collaborating in meeting our critical workforce needs in Minot and throughout the entire northcentral North Dakota region.

Sincerely,



John M. Kutch,
President & CEO

cc: St. Luke's Hospital
Mountrail County Medical Center
Presentation Medical Center
St. Andrew's Health Center
St. Aloisius Hospital
Kenmare Hospital
Tioga Medical Center

Program Overview

Clinical/Medical Laboratory Technician

Lightcast Q2 2025 Data Set

June 2025

Bottineau, North Dakota

Parameters

Completions Year: 2023

Jobs Timeframe: 2023 - 2024

Job Postings Timeframe: Jun 2021 - Jul 2023

Programs:

Code	Description
51.1004	Clinical/Medical Laboratory Technician

Regions:

Code	Description
38	North Dakota

Education Level: Any

Tuition Type: Tuition & Fees

Graduate Status: Undergraduate

Residency: In-State

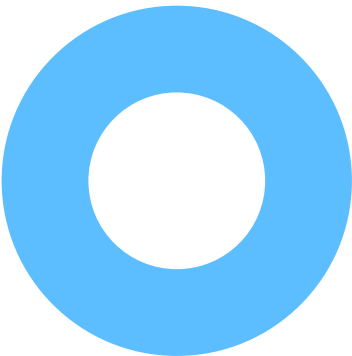
There are not enough institutions in this search to display this information.

Program Overview



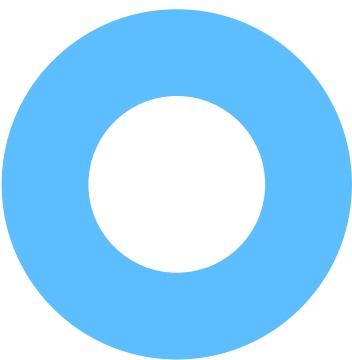
	Completions (2023)	% Completions	Institutions (2023)	% Institutions
● All Programs	6	100%	1	100%
● Distance Offered Programs	0	0%	0	0%
● Non-Distance Offered Programs	6	100%	1	100%

Market Share by Institution Type



Institution Type	Completions (2023)	Market Share
● Public, 4-year or above	6	100.0%

Market Share by Program

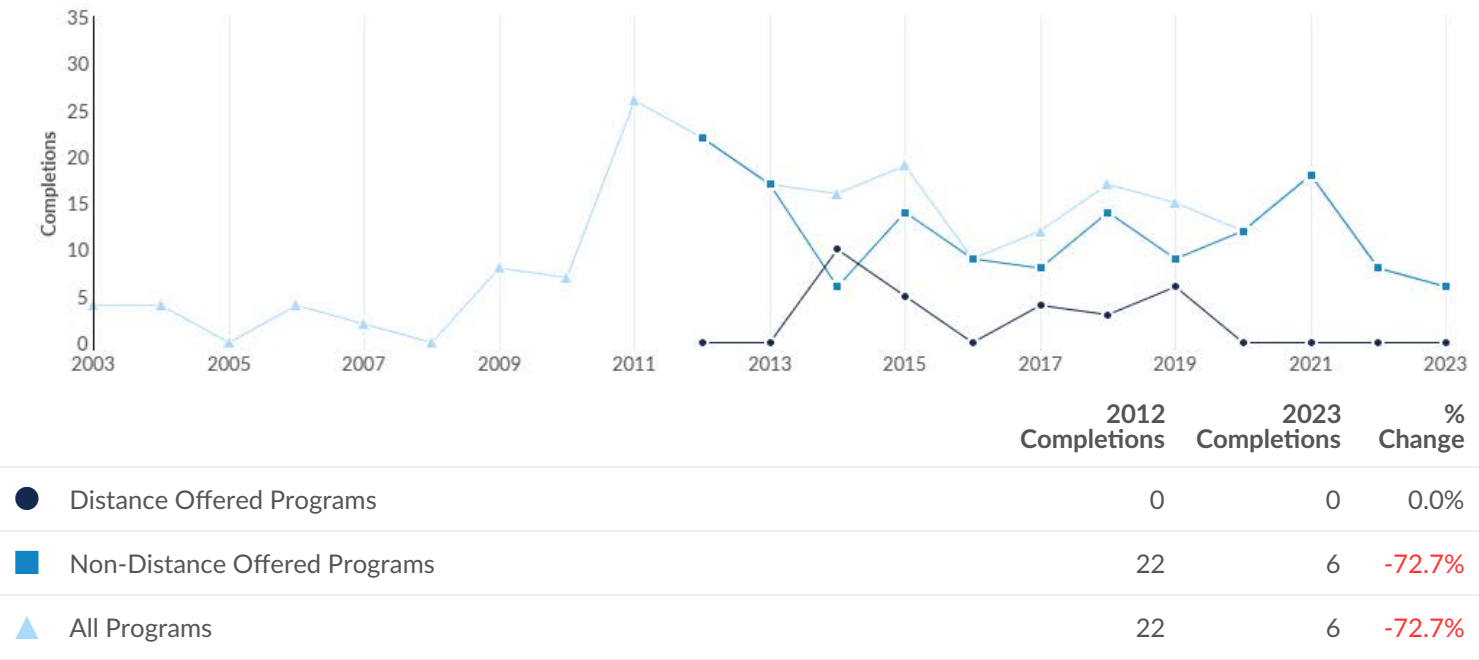


Program	Completions (2023)	Market Share
Clinical/Medical Laboratory Technician (51.1004)	6	100.0%

Completions by Institution

Institution	Completions (2023)	Growth % YOY (2023)	Market Share (2023)	IPEDS Tuition & Fees (2023)	Completions Trend (2019-2023)
Bismarck State College	6	-25.0%	100.0%	\$5,195	

Regional Trends



Regional Completions by Award Level



Award Level	Completions (2023)	Percent
● Associate's Degree	6	100.0%
Award of less than 1 academic year	0	0.0%
Award of at least 1 but less than 2 academic years	0	0.0%
Award of at least 2 but less than 4 academic years	0	0.0%
Bachelor's Degree	0	0.0%
Postbaccalaureate certificate	0	0.0%
Master's Degree	0	0.0%
Post-masters certificate	0	0.0%
Doctor's Degree	0	0.0%

Similar Programs

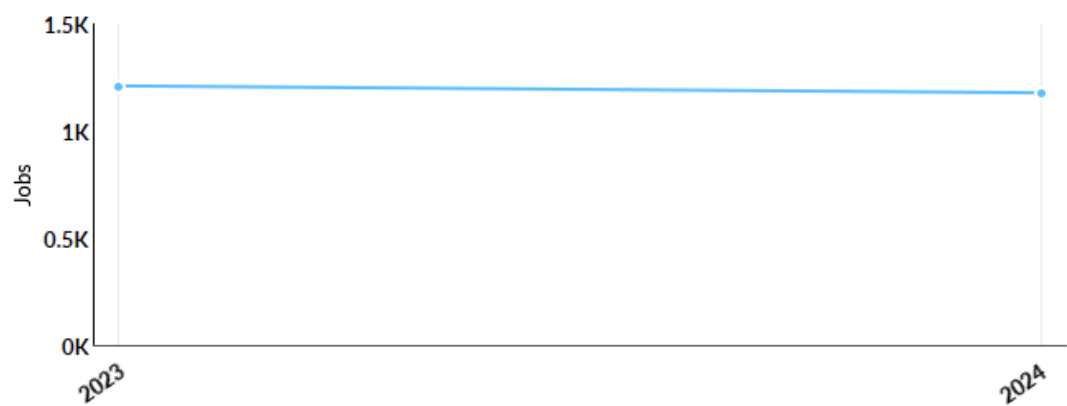
14 Programs (2023)		444 Completions (2023)
CIP Code	Program	Completions (2023)
26.0101	Biology/Biological Sciences, General	231
51.1005	Clinical Laboratory Science/Medical Technology/Technologist	111
40.0501	Chemistry, General	34
51.1007	Histologic Technology/Histotechnologist	27
51.0000	Health Services/Allied Health/Health Sciences, General	14
26.1201	Biotechnology	8
26.0102	Biomedical Sciences, General	6
30.0101	Biological and Physical Sciences	4
51.0802	Clinical/Medical Laboratory Assistant	4
51.1009	Phlebotomy Technician/Phlebotomist	4

Target Occupations

1,208 Jobs (2023) 21% above National average	-2.6% % Change (2023-2024) Nation: +1.5%	\$29.70/hr \$61.8K/yr Median Earnings Nation: \$29.75/hr; \$61.9K/yr	90 Annual Openings		
Occupation	2023 Jobs	Annual Openings	Median Earnings	Growth (2023 - 2024)	Employment Concentration (2023)
Clinical Laboratory Technologists and Technicians	1,208	90	\$29.70/hr	-2.65%	1.21

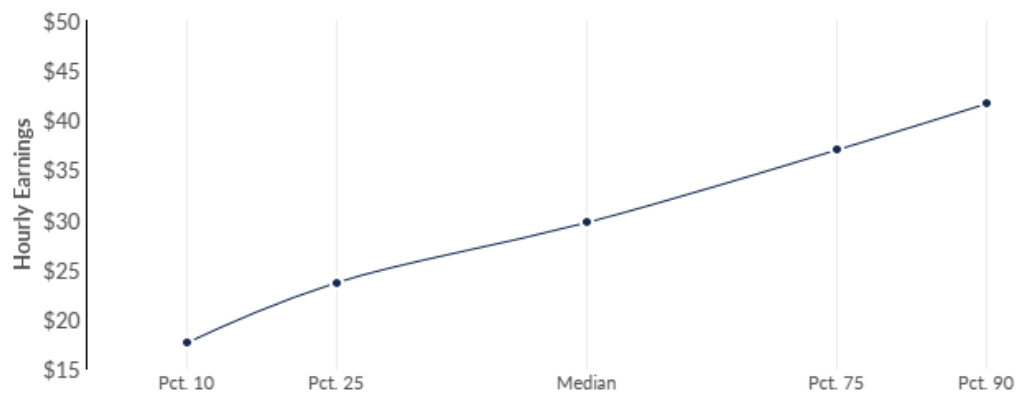
Growth for Clinical Laboratory Technologists and Technicians (29-2018)

1,208 2023 Jobs	1,176 2024 Jobs	-32 Change (2023-2024)	-2.6% % Change (2023-2024)
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Percentile Earnings for Clinical Laboratory Technologists and Technicians (29-2018)

\$23.66/hr 25th Percentile Earnings	\$29.70/hr Median Earnings	\$37.00/hr 75th Percentile Earnings
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Job Postings Summary

<div>1,239</div> <div>Unique Postings</div> <div>3,630 Total Postings</div>	<div>3 : 1</div> <div>Posting Intensity</div> <div><div></div></div> <div>Regional Average: 2 : 1</div>	<div>155</div> <div>Employers Competing</div> <div>8,711 Total Employers</div>	<div>27 days</div> <div>Median Posting Duration</div> <div>Regional Average: 31 days</div>
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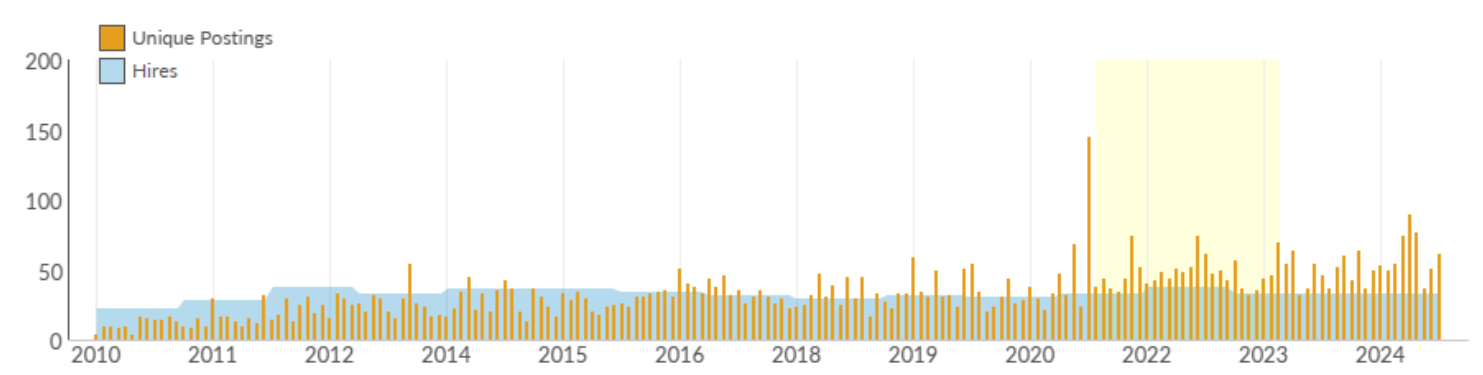
There were 3,630 total job postings for your selection from June 2021 to July 2023, of which 1,239 were unique. These numbers give us a Posting Intensity of 3-to-1, meaning that for every 3 postings there is 1 unique job posting.

This is close to the Posting Intensity for all other occupations and companies in the region (2-to-1), indicating that they are putting average effort toward hiring for this position.

Job Postings vs. Hires











48	35
Avg. Monthly Postings (Jun 2021 - Jul 2023)	Avg. Monthly Hires (Jun 2021 - Jul 2023)

In an average month, there were 48 newly posted job postings for *Clinical Laboratory Technologists and Technicians* , and 35 actually hired. This means there was approximately 1 hire for every 1 unique job posting for *Clinical Laboratory Technologists and Technicians* .













Occupation	Avg Monthly Postings (Jun 2021 - Jul 2023)	Avg Monthly Hires (Jun 2021 - Jul 2023)
Clinical Laboratory Technologists and Technicians	48	35

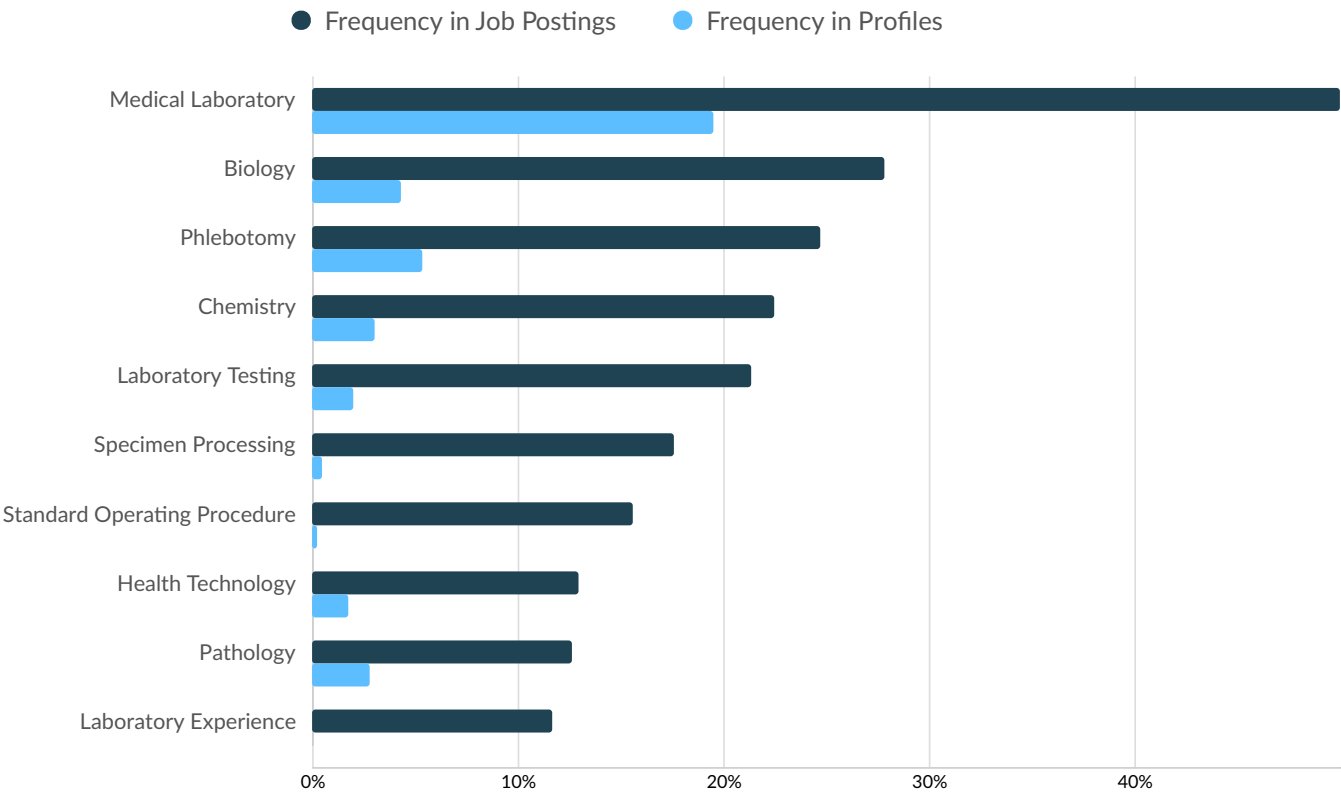
Top Companies Posting

Company	Total/Unique (Jun 2021 - Jul 2023)	Posting Intensity	Median Posting Duration
Sanford Health	1,418 / 263	5 : 1 	28 days
Essentia Health	320 / 87	4 : 1 	28 days
University of North Dakota	133 / 61	2 : 1 	36 days
CommonSpirit Health	121 / 59	2 : 1 	34 days
Catholic Health Initiatives	68 / 42	2 : 1 	32 days
North Dakota State University	98 / 42	2 : 1 	34 days
Altru Health Systems	70 / 39	2 : 1 	n/a
K&A Recruiting	38 / 29	1 : 1 	22 days
Trinity Health	95 / 29	3 : 1 	12 days
Aldevron	47 / 22	2 : 1 	34 days

Top Posted Job Titles

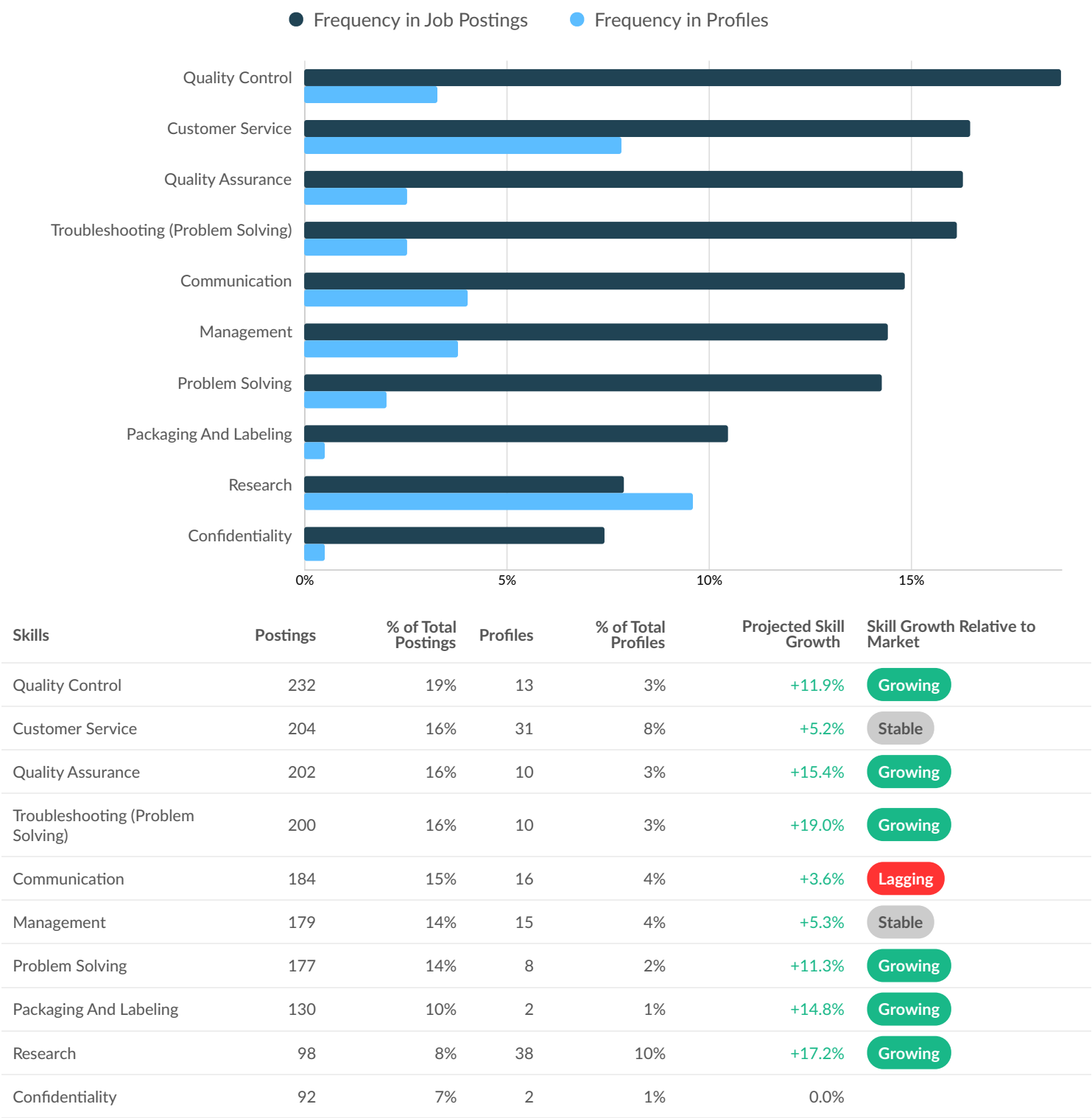
Job Title	Total/Unique (Jun 2021 - Jul 2023)	Posting Intensity	Median Posting Duration
Laboratory Technicians	281 / 144	2 : 1 	32 days
Medical Technologists	237 / 114	2 : 1 	32 days
Medical Laboratory Technicians	168 / 77	2 : 1 	26 days
Medical Technologists/Medical Laboratory Technicians	114 / 72	2 : 1 	23 days
Medical Laboratory Technicians/Medical Laboratory Scientists	373 / 67	6 : 1 	37 days
Pathology Technicians	483 / 56	9 : 1 	28 days
Laboratory Assistants	192 / 44	4 : 1 	24 days
Travel Medical Technologists	58 / 39	1 : 1 	18 days
Registered Polysomnographic Technologists	98 / 30	3 : 1 	n/a
Medical Technicians	44 / 24	2 : 1 	36 days

Top Specialized Skills

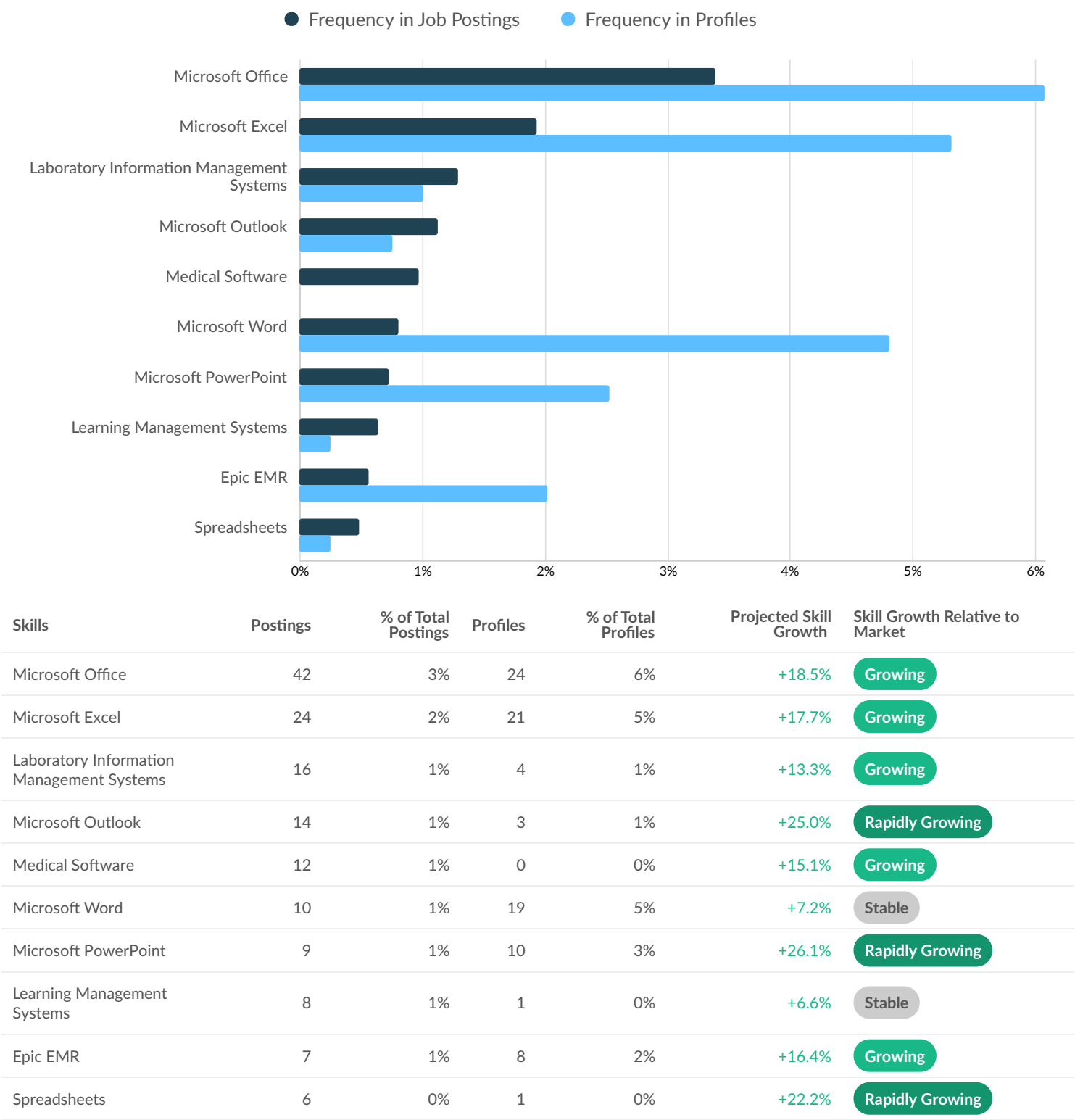


Skills	Postings	% of Total Postings	Profiles	% of Total Profiles	Projected Skill Growth	Skill Growth Relative to Market
Medical Laboratory	619	50%	77	19%	+22.6%	Rapidly Growing
Biology	345	28%	17	4%	+25.7%	Rapidly Growing
Phlebotomy	306	25%	21	5%	+12.7%	Growing
Chemistry	278	22%	12	3%	+18.2%	Growing
Laboratory Testing	264	21%	8	2%	+14.4%	Growing
Specimen Processing	218	18%	2	1%	+10.5%	Growing
Standard Operating Procedure	193	16%	1	0%	+9.6%	Growing
Health Technology	160	13%	7	2%	+11.7%	Growing
Pathology	156	13%	11	3%	+10.8%	Growing
Laboratory Experience	145	12%	0	0%	+11.5%	Growing

Top Common Skills



Top Software Skills



Top Qualifications

Qualification	Postings with Qualification
American Society For Clinical Pathology (ASCP) Certification	370
Basic Life Support (BLS) Certification	167
American Medical Technologists (AMT) Certification	98
Registered Respiratory Therapist (RRT)	60
Registered Polysomnographic Technologist	56
Valid Driver's License	51
Licensed Practical Nurse (LPN)	37
Medical Laboratory Technician (MLT-ASCP)	25
Registered Nurse (RN)	23
Medical Laboratory Scientist (MLS-ASCP)	22

Appendix A

Program Selection Details

CIP Code	Program Name
51.1004	Clinical/Medical Laboratory Technician

Appendix B - Data Sources and Calculations

Institution Data

The institution data in this report is taken directly from the national IPEDS database published by the U.S. Department of Education's National Center for Education Statistics.

Location Quotient

Location quotient (LQ) is a way of quantifying how concentrated a particular industry, cluster, occupation, or demographic group is in a region as compared to the nation. It can reveal what makes a particular region unique in comparison to the national average.

Occupation Data

Lightcast occupation employment data are based on final Lightcast industry data and final Lightcast staffing patterns. Wage estimates are based on Occupational Employment Statistics (QCEW and Non-QCEW Employees classes of worker) and the American Community Survey (Self-Employed and Extended Proprietors). Occupational wage estimates are also affected by county-level Lightcast earnings by industry.

Lightcast Job Postings

Job postings are collected from various sources and processed/enriched to provide information such as standardized company name, occupation, skills, and geography.

State Data Sources

This report uses state data from the following agencies: North Dakota Job Service



1020 20th Avenue SW
PO Box 940
Minot, North Dakota 58702-0940

Telephone: 701.852.6000
Fax: 701.838.2488
www.minotchamberedc.com
minot@minotchamberedc.com

June 25, 2025

Dr. Carmen Simone
Campus Dean/CEO
Dakota College at Bottineau
105 Simrall Blvd
Bottineau, ND 58318

RE: Surgical, Tech, Paramedic, and Medical Lab Tech Programs

Dr. Simone,

Our mission at the Minot Area Chamber EDC (MACEDC) is to advocate for and invest in business activity by being a collaborative partner in the community, focused on improving quality of life for all. MACEDC supports key initiatives that build and strengthen our economy and is grateful to be a strategic partner of the Minot State University and Dakota College at Bottineau.

One of MACEDC's key pillars of focus is workforce development, and we believe that the addition of the three proposed academic programs (Surgical Technology, Paramedic, and Medical Laboratory Technology) would not only expand DCB's offerings but would develop skilled medical professionals to enter the workforce and help fill crucial positions throughout the region and state. These programs would help expand a Regional Health Sciences Institute (RHSI) in downtown Minot, providing a hands-on clinic experience for the students and contributing to the long-term vision of an RHSI.

We wholeheartedly support Dakota College at Bottineau's efforts to develop the three new programs and look forward to continued success in meeting regional healthcare and workforce needs.

Sincerely,

Brekka Kramer
President | CEO
Minot Area Chamber EDC

Application Number

7

Institution

Dakota College at Bottineau

Applicant Name.

Kayla O'Toole

Applicant Title.

Associate Dean for Academic Affairs

Applicant Department.

Academic Affairs

Project Title.

Developing a Medical Surgical Technology Program in Minot to Address Regional Healthcare Needs

Briefly describe the proposed project.

Trinity Health has identified a need for skilled Medical Surgical Technologists in the Minot region and supports Dakota College at Bottineau (DCB) in establishing a new Medical Surgical Technology AAS and Certificate program. These programs will be located at Trinity Health Center West in Minot. DCB will offer hands-on, regionally focused training to address local healthcare workforce needs. This program is a new offering for DCB and will help meet the growing demand in the Minot area and surrounding regions. Program approval through the SBHE will be required.

Does the proposal meet the statutory guidance of N.D.C.C. 15-10-75?

Yes

Indicate which statutory objective this proposal will advance (as required by N.D.C.C. 15-10-75).

Curriculum Development; Equipment & technology purchases; Facility modifications and equipment installation; Hiring and training new and existing instructors; Education program promotion; Enhancement of postsecondary partnerships with primary and secondary schools

Briefly describe how the funds will advance the objectives.

Funds will support the development of a Medical Surgical Technology curriculum, the purchase of necessary equipment and technology, and facility modifications at Trinity Health Center West to accommodate the program contributing to the Regional Health Sciences Institution initiative. Additionally, funds will be used to hire and train a full-time faculty member as well as adjunct instructors, promote the program to prospective students, and enhance partnerships with local schools to create pathways for future healthcare professionals. This comprehensive approach will address regional workforce needs and strengthen post-secondary education opportunities in the Minot area.

When will the proposed project be ready to admit students?

Fall 2026

Amount of funding requested.

\$597,500

What other sources of funding or resources support the proposed project?

Additional financial support will come from tuition revenue and program-specific fees. The program will be located in the existing Trinity Health Center West building, which is currently leased by Dakota College at Bottineau, eliminating the need for new construction or major capital investment. Furthermore, existing partnerships, particularly with Trinity Health, will provide access to donated equipment, helping to reduce startup and operational costs.

Which identified workforce development need will this project address?

According to Job Service North Dakota, healthcare remain one of the state's highest-demand sectors. Among the occupations identified as high need are Surgical Technicians. This project directly addresses that workforce gap by expanding educational capacity and training opportunities for future professionals in the region.

What are the project's metrics for success? How will these metrics be achieved?

Success will be measured through several key metrics:

Enrollment Growth and Stability – This is a new program, so a focus will be given to promotion and recruiting an initial cohort of students. Then, an increase in enrollment will serve as a measurable indicator of growth.

Program Completion Rates – Completion rates will be closely tracked to establish and achieve targeted benchmarks for student success.

Certification Pass Rates – Success will be demonstrated by an increase in the number of students passing the national certification exam.

Job Placement Rates – Employment outcomes will be monitored, with the goal of graduates securing related positions within six months of program completion.

These outcomes will be achieved through targeted program promotion, strengthened partnerships with healthcare providers and local schools, modernized training equipment, and a continued relationship with Trinity Health.

How does the project support student retention in North Dakota to meet the needs of local industries?

This project enhances student retention by offering accessible, high-quality training in Minot, making it easier for local students to pursue careers as surgery technicians. Partnerships with local healthcare providers, like Trinity Health, offer hands-on experience and strong employment pathways, encouraging graduates to stay in North Dakota and meet the growing demand for Surgical Technologist professionals in rural areas.

How are the students supported by this project prepared to enter the workforce with minimal additional on-the-job training?

Students will be job ready through hands-on training with industry-standard equipment, aligned with local healthcare needs. The program's curriculum, developed in collaboration with healthcare providers, ensures students gain the skills and experience required to minimize on-the-job training.

Are there private sector partners in creating/offering the project?

Yes, Trinity Health is a key private sector partner in this project. They will contribute by donating medical equipment and supplies, which will be essential for hands-on student training. Their support helps ensure the program has access to state-of-the-art resources that align with real-world healthcare needs. They will also provide support for high-quality clinical placements and real-world experiences for DCB students.

Is this project offered in partnership with another NDUS institution?

No

Does this project support a program already approved per SBHE policies and NDUS procedures?

No

If not previously approved, is the project unique in the NDUS system?

While this program is offered at other institutions within the NDUS system, the proposed Medical Surgical Technology program in Minot is uniquely tailored to meet the specific healthcare workforce needs of the Minot region and surrounding rural communities. By offering this training in Minot, we aim to reduce workforce gaps, ensuring that students are prepared to meet the unique challenges of providing care in smaller communities.

Describe how the project is novel and innovative.

The proposed Medical Surgical Technology program is innovative in its focus on meeting the specific healthcare workforce needs of Minot and surrounding rural communities. The program will provide hands-on, locally focused training in partnership with regional healthcare providers like Trinity Health. Students will gain skills tailored to the unique challenges of healthcare delivery in rural areas, preparing them to work effectively in both urban and rural healthcare settings. By offering training in Minot, the program ensures a pipeline of qualified professionals ready to serve local healthcare employers immediately upon graduation.

How will the project be sustained after WEIF Grant funding is expended?

After the WEIF grant funding is expended, the project will be sustained through a combination of tuition revenue, program fees, and ongoing partnerships with local healthcare providers like Trinity Health.

How will the project adapt over time to changing workforce needs and technological changes?

The Medical Surgical Technology program will remain adaptable by continuously collaborating with local healthcare providers to assess emerging workforce needs. Regular feedback from industry partners like Trinity Health will ensure the curriculum stays aligned with evolving healthcare practices and technological advancements. Obtaining specialized accreditation will position DCB graduates to be prepared for the workforce. Additionally, the program will incorporate ongoing professional development for instructors to stay current with new technologies and medical procedures. This proactive approach will allow the program to adjust and integrate new tools, technologies, and healthcare practices, ensuring students are always prepared for the latest industry demands.



June 23, 2025

Dr. Steven Shirley
President
Minot State University and
Dakota College at Bottineau
500 University Ave West
Minot, ND 58707

Dear Dr. Shirley:

On behalf of Trinity Health and our seven (7) affiliated critical access hospitals—St. Luke's Hospital (Crosby), Mountrail County Medical Center (Stanley), Presentation Medical Center (Rolla), St. Andrew's Health Center (Bottineau), St. Aloisius Hospital (Harvey), Kenmare Community Hospital, and Tioga Medical Center—I am pleased to offer our full endorsement and support for Dakota College at Bottineau's development of a Surgical Technology program. This innovative program marks an exciting first step in the broader vision for a Regional Health Sciences Institute (RHSI) located in downtown Minot.

To ensure a successful launch, we support the hiring of a dedicated program director who will lead all facets of development and implementation, including curriculum design. We strongly recommend a ladder approach, with sterile processing and sterilization techniques integrated into the program structure, potentially as both embedded content and a stand-alone certificate option. We also anticipate and support the pursuit of specialized accreditation through the Commission on Accreditation of Allied Health Education Programs (CAAHEP), positioning RHSI graduates to be highly qualified and workforce-ready.

We are enthusiastic about the program's placement within Health Center West, ideally situated alongside the Dakota College at Bottineau Nursing program. We recognize that minor renovations and strategic equipment investments will be necessary to bring this learning environment to life. Trinity Health is committed to partnering in these efforts, including support for high-quality clinical placements and real-world experiences that will benefit students and strengthen the region's surgical workforce pipeline.

Trinity Health is proud to support this Workforce Education Innovation Fund proposal. We view this collaboration not only as an opportunity to meet the growing demand for surgical technologists, but as a model for how education and healthcare can work together to solve regional workforce challenges. We are eager to welcome graduates of the RHSI into our system as employees and remain committed to building this pipeline of skilled professionals for the communities we serve.

We value Dakota College at Bottineau as a strategic partner and look forward to what we will accomplish together through this forward-looking initiative.

Sincerely,



John M. Kutch
President & CEO

cc:

St. Luke's Hospital
Mountrail County Medical Center
Presentation Medical Center
St. Andrew's Health Center
St. Aloisius Hospital
Kenmare Hospital
Tioga Medical Center

Program Overview

Surgical Technology/Technologist

Lightcast Q2 2025 Data Set

June 2025

Parameters

Completions Year: 2023

Jobs Timeframe: 2023 - 2024

Job Postings Timeframe: Jun 2021 - Jul 2023

Programs:

Code	Description
51.0909	Surgical Technology/Technologist

Regions:

Code	Description
38	North Dakota

Education Level: Any

Tuition Type: Tuition & Fees

Graduate Status: Undergraduate

Residency: In-State

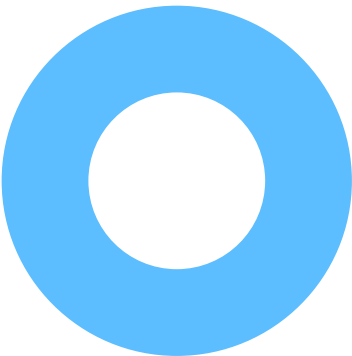
There are not enough institutions in this search to display this information.

Program Overview



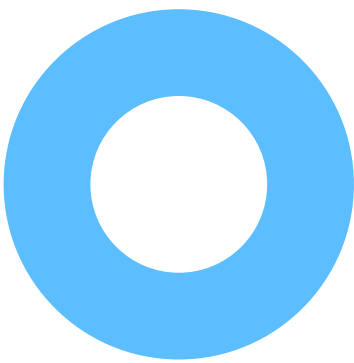
	Completions (2023)	% Completions	Institutions (2023)	% Institutions
● All Programs	7	100%	1	100%
● Distance Offered Programs	0	0%	0	0%
● Non-Distance Offered Programs	7	100%	1	100%

Market Share by Institution Type



Institution Type	Completions (2023)	Market Share
● Public, 4-year or above	7	100.0%

Market Share by Program

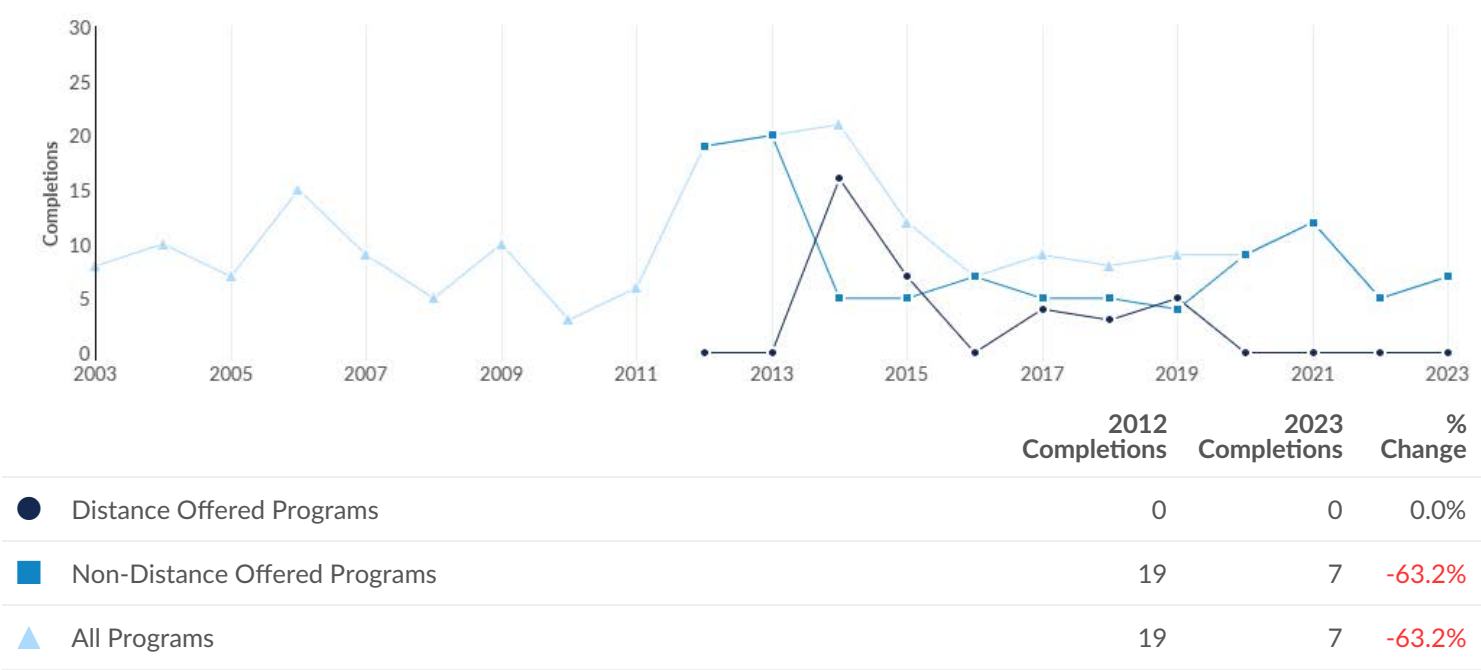


Program	Completions (2023)	Market Share
<div><div></div>Surgical Technology/Technologist (51.0909)</div>	7	100.0%

Completions by Institution

Institution	Completions (2023)	Growth % YOY (2023)	Market Share (2023)	IPEDS Tuition & Fees (2023)	Completions Trend (2019-2023)
Bismarck State College	7	40.0%	100.0%	\$5,195	<div></div>

Regional Trends



Regional Completions by Award Level



Award Level	Completions (2023)	Percent
● Associate's Degree	7	100.0%
Award of less than 1 academic year	0	0.0%
Award of at least 1 but less than 2 academic years	0	0.0%
Award of at least 2 but less than 4 academic years	0	0.0%
Bachelor's Degree	0	0.0%
Postbaccalaureate certificate	0	0.0%
Master's Degree	0	0.0%
Post-masters certificate	0	0.0%
Doctor's Degree	0	0.0%

Similar Programs

11
Programs (2023)

149
Completions (2023)

CIP Code	Program	Completions (2023)
51.0911	Radiologic Technology/Science - Radiographer	55
51.0908	Respiratory Care Therapy/Therapist	36
51.0713	Medical Insurance Coding Specialist/Coder	16
51.0000	Health Services/Allied Health/Health Sciences, General	14
51.0710	Medical Office Assistant/Specialist	12
51.0707	Health Information/Medical Records Technology/Technician	11
51.0910	Diagnostic Medical Sonography/Sonographer and Ultrasound Technician	5
51.0705	Medical Office Management/Administration	0
51.0706	Health Information/Medical Records Administration/Administrator	0
51.0708	Medical Transcription/Transcriptionist	0

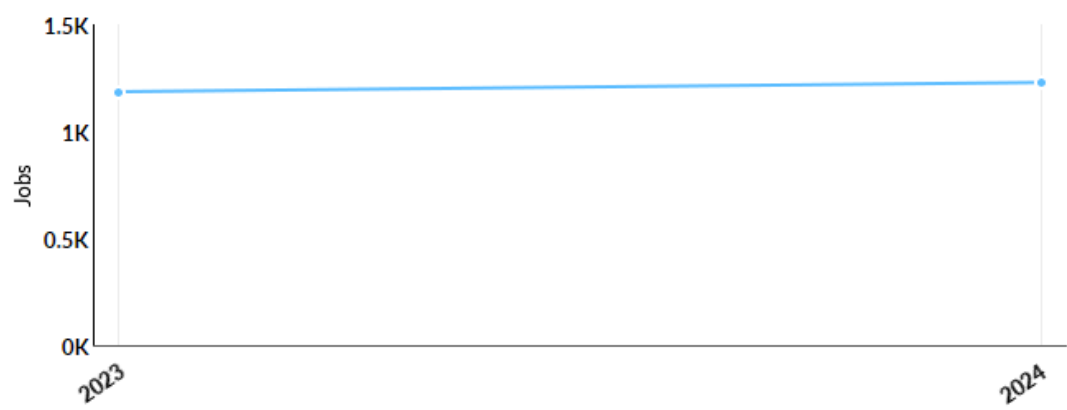
Target Occupations

<div>1,185</div> <div>Jobs (2023)</div> <div>14% above National average</div>	<div>+3.6%</div> <div>% Change (2023-2024)</div> <div>Nation: +1.9%</div>	<div>\$22.92/hr</div> <div>\$47.7K/yr</div> <div>Median Earnings</div> <div>Nation: \$25.21/hr;</div> <div>\$52.4K/yr</div>	<div>236</div> <div>Annual Openings</div>
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Occupation	2023 Jobs	Annual Openings	Median Earnings	Growth (2023 - 2024)	Employment Concentration (2023)
Health Technologists and Technicians, All Other	617	96	\$22.15/hr	-0.49%	1.21
Surgical Technologists	299	34	\$28.84/hr	-7.69%	0.91
Medical Equipment Preparers	269	106	\$18.02/hr	+25.65%	1.34

Growth

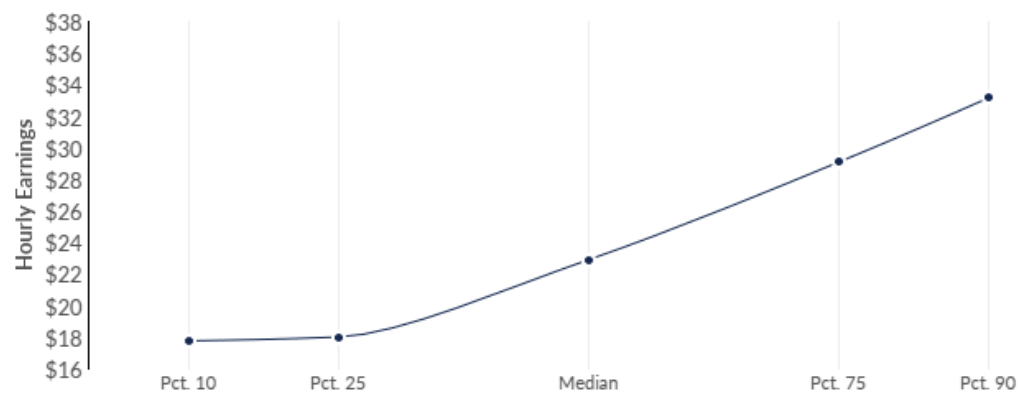
1,185 2023 Jobs	1,228 2024 Jobs	43 Change (2023-2024)	3.6% % Change (2023-2024)
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Occupation	2023 Jobs	2024 Jobs	Change	% Change
Surgical Technologists (29-2055)	299	276	-23	-8%
Health Technologists and Technicians, All Other (29-2099)	617	614	-3	0%
Medical Equipment Preparers (31-9093)	269	338	69	26%

Percentile Earnings

<div>\$18.02/hr</div> <div>25th Percentile Earnings</div>	<div>\$22.92/hr</div> <div>Median Earnings</div>	<div>\$29.11/hr</div> <div>75th Percentile Earnings</div>
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Occupation	25th Percentile Earnings	Median Earnings	75th Percentile Earnings
Surgical Technologists (29-2055)	\$24.34	\$28.84	\$29.97
Health Technologists and Technicians, All Other (29-2099)	\$18.11	\$22.15	\$29.09
Medical Equipment Preparers (31-9093)	\$17.97	\$18.02	\$22.28

Job Postings Summary

<div>3,361</div> <div>Unique Postings</div> <div>13,175 Total Postings</div>	<div>4 : 1</div> <div>Posting Intensity</div> <div><div></div></div> <div>Regional Average: 2 : 1</div>	<div>213</div> <div>Employers Competing</div> <div>8,711 Total Employers</div>	<div>29 days</div> <div>Median Posting Duration</div> <div>Regional Average: 31 days</div>
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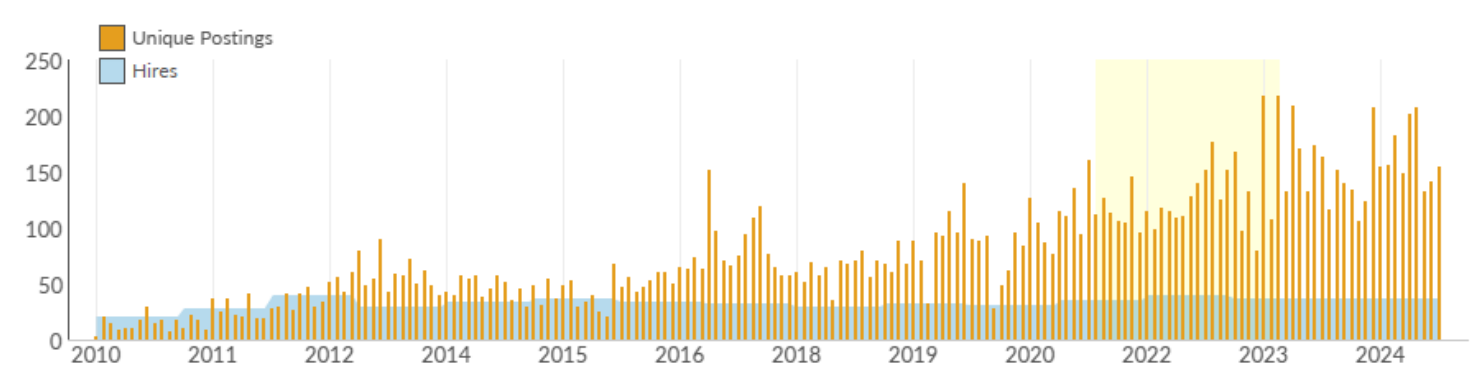
There were 13,175 total job postings for your selection from June 2021 to July 2023, of which 3,361 were unique. These numbers give us a Posting Intensity of 4-to-1, meaning that for every 4 postings there is 1 unique job posting.

This is higher than the Posting Intensity for all other occupations and companies in the region (2-to-1), indicating that they may be trying harder to hire for this position.

Job Postings vs. Hires











129	38
Avg. Monthly Postings (Jun 2021 - Jul 2023)	Avg. Monthly Hires (Jun 2021 - Jul 2023)

In an average month, there were 129 newly posted job postings for 3 Occupations, and 38 actually hired. This means there was approximately 1 hire for every 3 unique job postings for 3 Occupations.













Occupation	Avg Monthly Postings (Jun 2021 - Jul 2023)	Avg Monthly Hires (Jun 2021 - Jul 2023)
Health Technologists and Technicians, All Other	96	16
Surgical Technologists	25	12
Medical Equipment Preparers	8	10

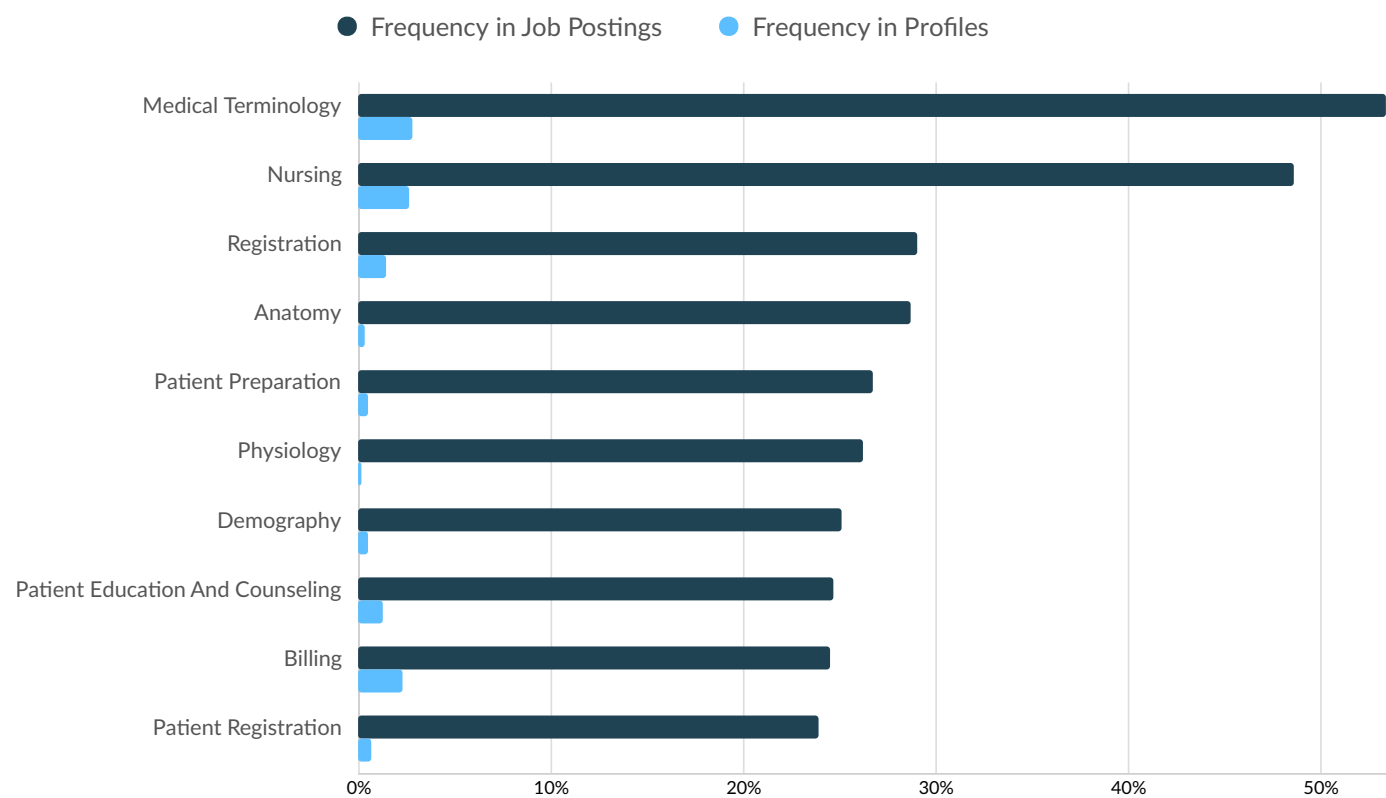
Top Companies Posting

Company	Total/Unique (Jun 2021 - Jul 2023)	Posting Intensity	Median Posting Duration
Sanford Health	9,251 / 1,648	6 : 1 	30 days
Essentia Health	783 / 142	6 : 1 	33 days
Catholic Health Initiatives	212 / 141	2 : 1 	35 days
Tenet Healthcare	338 / 115	3 : 1 	26 days
Altru Health Systems	199 / 93	2 : 1 	n/a
Sanford	304 / 64	5 : 1 	n/a
CommonSpirit Health	102 / 63	2 : 1 	32 days
Conifer Health Solutions	110 / 44	3 : 1 	34 days
Salinas Valley Memorial Hospital	93 / 34	3 : 1 	n/a
Trinity Health	63 / 34	2 : 1 	31 days

Top Posted Job Titles

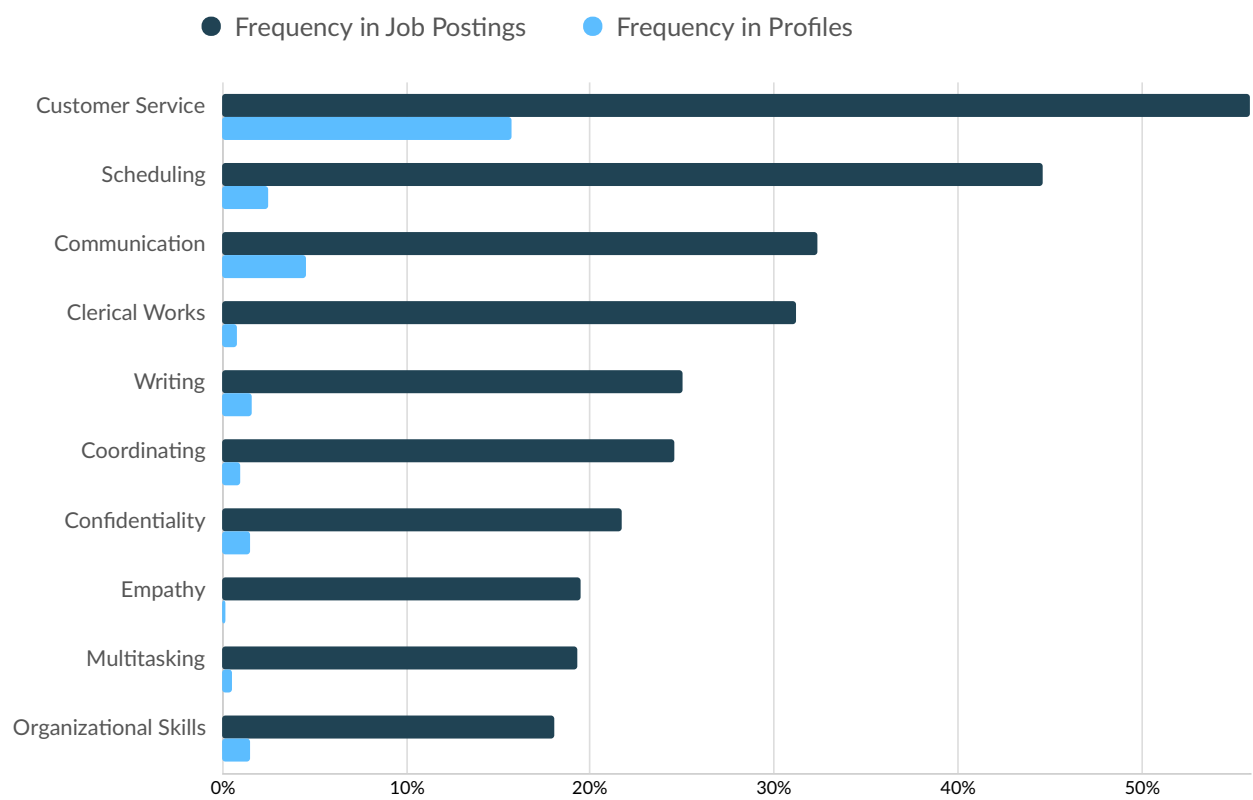
Job Title	Total/Unique (Jun 2021 - Jul 2023)	Posting Intensity	Median Posting Duration
Patient Access Representatives	3,909 / 748	5 : 1 	29 days
Patient Care Technicians	2,638 / 510	5 : 1 	33 days
Surgical Technologists	647 / 157	4 : 1 	25 days
Sterile Processing Technicians	758 / 118	6 : 1 	23 days
Inpatient Patient Care Technicians	470 / 97	5 : 1 	38 days
Surgical Technicians	139 / 81	2 : 1 	21 days
Surgical Techs	163 / 80	2 : 1 	33 days
Medical Surgical Patient Care Assistants	300 / 70	4 : 1 	27 days
Patient Service Representatives	109 / 52	2 : 1 	40 days
Certified Surgical Technologists	163 / 50	3 : 1 	24 days

Top Specialized Skills



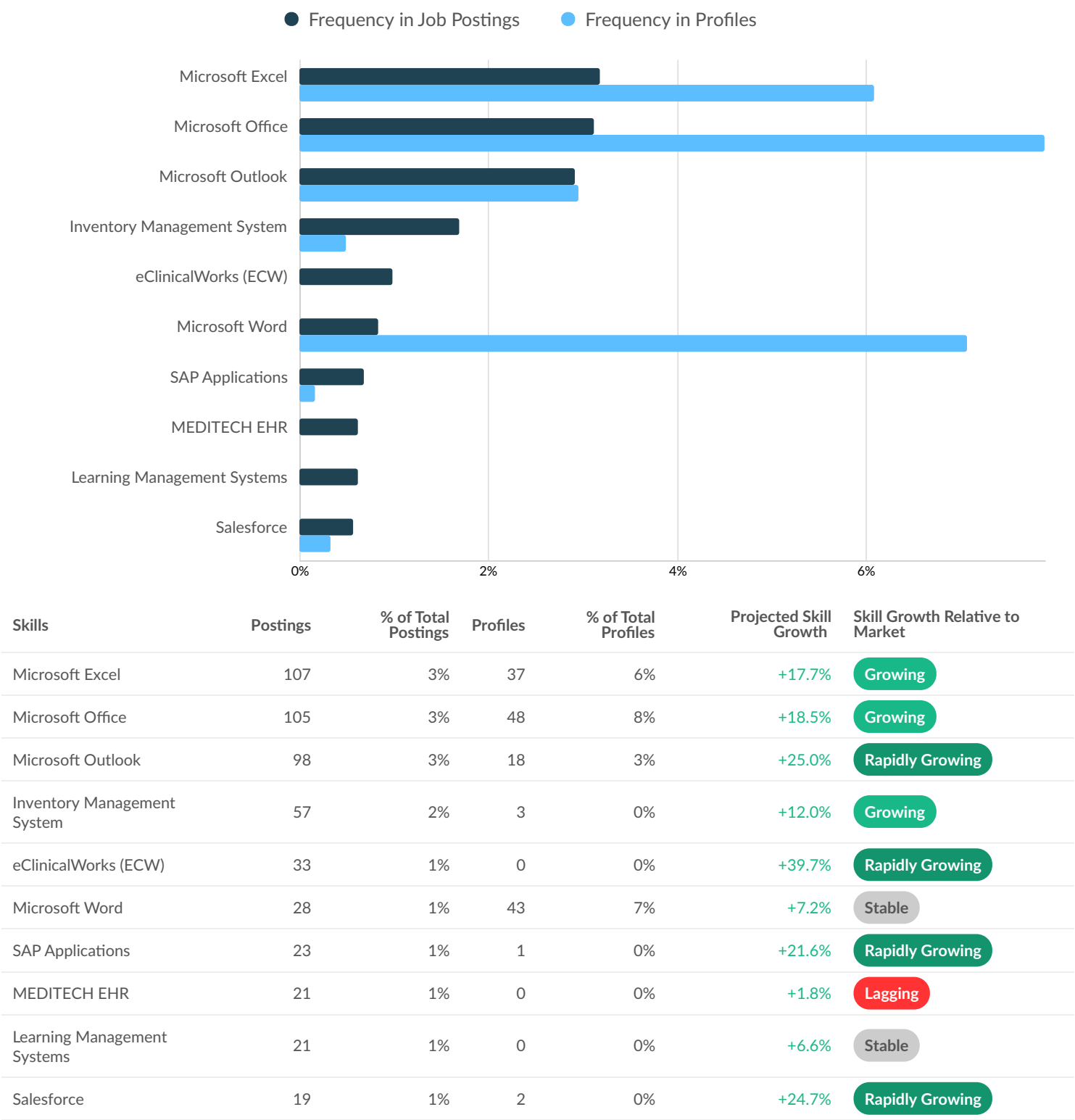
Skills	Postings	% of Total Postings	Profiles	% of Total Profiles	Projected Skill Growth	Skill Growth Relative to Market
Medical Terminology	1,796	53%	17	3%	+10.8%	Growing
Nursing	1,636	49%	16	3%	+20.1%	Rapidly Growing
Registration	978	29%	9	1%	+29.0%	Rapidly Growing
Anatomy	965	29%	2	0%	+14.2%	Growing
Patient Preparation	899	27%	3	0%	+15.8%	Growing
Physiology	881	26%	1	0%	+9.5%	Growing
Demography	846	25%	3	0%	+11.8%	Growing
Patient Education And Counseling	831	25%	8	1%	+11.6%	Growing
Billing	825	25%	14	2%	+20.0%	Rapidly Growing
Patient Registration	804	24%	4	1%	+5.0%	Stable

Top Common Skills



Skills	Postings	% of Total Postings	Profiles	% of Total Profiles	Projected Skill Growth	Skill Growth Relative to Market
Customer Service	1,880	56%	96	16%	+5.2%	Stable
Scheduling	1,501	45%	15	2%	+16.4%	Growing
Communication	1,089	32%	28	5%	+3.6%	Lagging
Clerical Works	1,049	31%	5	1%	+19.3%	Growing
Writing	842	25%	10	2%	+11.8%	Growing
Coordinating	827	25%	6	1%	+14.7%	Growing
Confidentiality	732	22%	9	1%	0.0%	
Empathy	655	19%	1	0%	+10.5%	Growing
Multitasking	651	19%	3	0%	+18.4%	Growing
Organizational Skills	608	18%	9	1%	+14.3%	Growing

Top Software Skills



Top Qualifications

Qualification	Postings with Qualification
Certified Nursing Assistant (CNA)	849
Certified Patient Care Technician (CPCT)	830
Licensed Practical Nurse (LPN)	750
Registered Nurse (RN)	677
Basic Life Support (BLS) Certification	463
Certified Surgical Technologist (CST)	213
Valid Driver's License	159
Certified Registered Central Service Technician (CRCST)	108
Medical License	85
Emergency Medical Technician (EMT)	80

Appendix A

Program Selection Details

CIP Code	Program Name
51.0909	Surgical Technology/Technologist

Appendix B - Data Sources and Calculations

Institution Data

The institution data in this report is taken directly from the national IPEDS database published by the U.S. Department of Education's National Center for Education Statistics.

Location Quotient

Location quotient (LQ) is a way of quantifying how concentrated a particular industry, cluster, occupation, or demographic group is in a region as compared to the nation. It can reveal what makes a particular region unique in comparison to the national average.

Occupation Data

Lightcast occupation employment data are based on final Lightcast industry data and final Lightcast staffing patterns. Wage estimates are based on Occupational Employment Statistics (QCEW and Non-QCEW Employees classes of worker) and the American Community Survey (Self-Employed and Extended Proprietors). Occupational wage estimates are also affected by county-level Lightcast earnings by industry.

Lightcast Job Postings

Job postings are collected from various sources and processed/enriched to provide information such as standardized company name, occupation, skills, and geography.

State Data Sources

This report uses state data from the following agencies: North Dakota Job Service



1020 20th Avenue SW
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Minot, North Dakota 58702-0940

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www.minotchamberedc.com
minot@minotchamberedc.com

June 25, 2025

Dr. Carmen Simone
Campus Dean/CEO
Dakota College at Bottineau
105 Simrall Blvd
Bottineau, ND 58318

RE: Surgical, Tech, Paramedic, and Medical Lab Tech Programs

Dr. Simone,

Our mission at the Minot Area Chamber EDC (MACEDC) is to advocate for and invest in business activity by being a collaborative partner in the community, focused on improving quality of life for all. MACEDC supports key initiatives that build and strengthen our economy and is grateful to be a strategic partner of the Minot State University and Dakota College at Bottineau.

One of MACEDC's key pillars of focus is workforce development, and we believe that the addition of the three proposed academic programs (Surgical Technology, Paramedic, and Medical Laboratory Technology) would not only expand DCB's offerings but would develop skilled medical professionals to enter the workforce and help fill crucial positions throughout the region and state. These programs would help expand a Regional Health Sciences Institute (RHSI) in downtown Minot, providing a hands-on clinic experience for the students and contributing to the long-term vision of an RHSI.

We wholeheartedly support Dakota College at Bottineau's efforts to develop the three new programs and look forward to continued success in meeting regional healthcare and workforce needs.

Sincerely,

Brekka Kramer
President | CEO
Minot Area Chamber EDC

Application Number.

2

Institution.

Dickinson State University

Applicant Name.

Dr. Holly Gruhlke

Applicant Title.

Vice President of Academic Affairs and Provost

Applicant Department.

Academic Affairs

Project Title.

Master of Science in Athletic Training at Dickinson State University

Briefly describe the proposed project.

Dickinson State University proposes to establish a Master of Science in Athletic Training (MSAT) program to address a growing shortage of certified athletic trainers in North Dakota, especially in rural and underserved areas. This program aligns with national licensure requirements mandating a master's degree and aims to graduate 20-30 students annually. The project includes partnerships with local healthcare providers and schools for clinical training and job placement. DSU seeks \$900,000 in Workforce Innovation Grant funding to support faculty, equipment, and facility upgrades over the 2025-2027 biennium, launching the program as part of a new School of Health Sciences.

Does the proposal meet the statutory guidance of N.D.C.C. 15-10-75?

Yes

Indicate which statutory objective this proposal will advance (as required by N.D.C.C. 15-10-75).

Curriculum Development; Equipment & technology purchases; Facility modifications and equipment installation; Hiring and training new and existing instructors

Briefly describe how the funds will advance the objectives.

The requested Workforce Innovation Grant funds will support the launch of the Master of Science in Athletic Training (MSAT) program by advancing the following objectives:

Curriculum Development: Funds will support faculty salaries and time dedicated to designing, implementing, and aligning the MSAT curriculum with national accreditation standards (CAATE), including courses in orthopedic evaluation, therapeutic interventions, and emergency response.

Equipment and Technology Purchases: Grant funding will be used to acquire essential training and

simulation equipment such as anatomical models, ultrasound and e-stim units, taping stations, rehabilitation tools, and clinical documentation software, ensuring a hands-on, industry-relevant learning environment.

Facility Modifications and Equipment Installation: The grant will fund the expansion and enhancement of DSU's clinical lab spaces to accommodate MSAT students. This includes installing new simulation tools and rehabilitation equipment to support required clinical competencies.

Hiring and training of new and existing instructors: The funding will enable Dickinson State University to recruit qualified faculty – including a program director, clinical coordinator, and instructional staff – for the new Master of Science in Athletic Training (MSAT) program. These hires will be essential for curriculum development, accreditation compliance, and the delivery of high-quality, workforce-aligned education. The investment in faculty directly fulfills the statute's goal of enhancing instructional capacity to meet North Dakota's workforce needs.

When will the proposed project be ready to admit students?

Fall 2027

Amount of funding requested.

\$900,000

What other sources of funding or resources support the proposed project?

Healthcare Partnerships: DSU will collaborate with local healthcare organizations, including an existing partnership with Sanford Health, to provide clinical training opportunities, access to qualified athletic trainers, and potential in-kind support such as facilities, supervision, and equipment.

Institutional Resources: DSU is actively investing in the program's success by posting a position for a program director, demonstrating institutional commitment to leadership and oversight of the MSAT program.

Student Scholarships: The DSU Heritage Foundation will provide scholarship funding to MSAT students, helping reduce financial barriers and attract high-quality applicants.

Tuition and Fees: Revenue generated through tuition and student fees will contribute to the long-term sustainability of the program, supporting ongoing operational costs such as faculty salaries, accreditation maintenance, and equipment upgrades.

Existing Infrastructure: While new training spaces are in development, students will have immediate access to DSU's state-of-the-art simulation space, allowing for high-quality clinical education from the outset.

Which identified workforce development need will this project address?

The proposed Master of Science in Athletic Training (MSAT) program at Dickinson State University will address the critical shortage of certified athletic trainers in North Dakota, particularly in rural and underserved regions.

Key workforce developments needs address include:

- Filling over 200 annual athletic training vacancies in North Dakota, many of which go unfilled in the western part of the state due to geographic and educational access barriers.

- Meeting new national licensure requirements, which now mandate a master's degree for certification,

thereby aligning regional workforce qualifications with current professional standards.

-Expanding access to healthcare services in schools, clinics, hospitals, and sports medicine settings by producing 20-30 well-prepared graduates annually who are ready to serve in both urban and rural communities.

This program directly supports the state's goals of increasing the healthcare workforce pipeline, especially in high-need areas.

What are the project's metrics for success? How will these metrics be achieved?

Project Metrics for Success and Strategies to Achieve Them:

1. Program Enrollment and Retention

Metric: Enroll at least 10 students in the first cohort, with growth to 20-30 students annually at full capacity.

Strategy: Implement targeted recruitment, provide scholarships through the DSU Heritage Foundation, and leverage partnerships with high schools and undergraduate programs in related fields (e.g., kinesiology, exercise science).

2. Graduation Rate

Metric: Achieve a graduation rate of 80% or higher within two years of program entry.

Strategy: Provide strong academic advising, hands-on clinical training, and use of DSU's simulation space to support student learning and preparedness.

3. Certification Exam Pass Rate

Metric: Maintain a 90% or higher first-time pass rate on the Board of Certification (BOC) exam.

Strategy: Align curriculum with national accreditation standards (CAATE), hire qualified faculty, and offer exam preparation resources and mock testing.

4. Graduate Employment

Metric: Ensure 90% of graduates are employed in the field or enrolled in advanced study within six months of graduation.

Strategy: Partner with regional healthcare providers and school systems to offer clinical placements, internships, and direct job pipelines.

5. Program Accreditation

Metric: Achieve and maintain accreditation from the Commission on Accreditation of Athletic Training Education (CAATE).

Strategy: Hire an experienced program director, follow CAATE guidelines, and invest in facilities and curriculum that meet accreditation criteria.

6. Stakeholder and Partner Engagement

Metric: Establish at least five formalized partnerships with healthcare organizations and schools for clinical education and advisory input.

Strategy: Continue building relationships with entities like Sanford Health and local districts, inviting

them to participate in curriculum development and clinical site coordination.

These metrics will be monitored through regular program review, student and employer feedback, and reporting to institutional and grant stakeholders.

How does the project support student retention in North Dakota to meet the needs of local industries?

The Master of Science in Athletic Training (MSAT) program at Dickinson State University supports student retention in North Dakota and addresses local industry needs in several key ways: **Regional Access to Education:** By offering the only MSAT program west of Bismarck, DSU provides a convenient and affordable option for students in rural and western North Dakota, reducing the need to leave the state for advancing training. **Strong Industry Partnerships:** Collaborations with regional healthcare providers (e.g., Sanford Health), school districts, and sports medicine clinics offer students clinical experiences and direct employment pathways, encouraging them to stay and work in the communities where they trained. **Alignment with Workforce Demand:** With over 200 athletic training vacancies annually in North Dakota, particularly in underserved rural areas, the program prepares students for immediate job placement upon graduation. **Community Connection:** By embedding clinical experiences and internships within local healthcare systems, the program fosters strong community ties and professional networks, increasing the likelihood that graduates will remain in the region after completing their degrees.

How are the students supported by this project prepared to enter the workforce with minimal additional on-the-job training?

Students in the proposed Master of Science in Athletic Training (MSAT) program at Dickinson State University will be workforce-ready upon graduation, with minimal need for additional on-the-job training, due to the following built-in supports and design elements:

- CAATE-Aligned Curriculum: The program will follow the Commission on Accreditation of Athletic Training Education (CAATE) standards, ensuring that students gain the full scope of competencies required for professional certification and immediate practice.

- Hands-On Clinical Experience: Students will complete extensive supervised clinical rotations in real-world settings – including hospitals, clinics, schools, and sports organizations – through partnerships with local healthcare providers such as Sanford Health. These experiences allow students to apply skills in patient care, emergency response, and injury prevention under the guidance of licensed professionals.

- Simulation and Lab Training: DSU will provide access to its state-of-the-art simulation lab, allowing students to develop technical skills (e.g., orthopedic evaluation, therapeutic modalities, taping, emergency management) in a controlled, realistic environment before entering clinical sites.

- Faculty Expertise and Mentorship: The program will be led by experienced faculty, including a program director and clinical coordinator, who will guide students through rigorous training and professional development to ensure confidence and competence in the field.

- BOC Exam Preparation: Students will be prepared to pass the Board of Certification (BOC) exam on their first attempt, which is essential for licensure and a strong indicator of workforce readiness.

- Workplace-Relevant Curriculum: Input from healthcare partners ensures the curriculum reflects current industry needs and expectations, reducing skill gaps and making graduates highly employable from day one.

Through this combination of structured coursework, applied clinical practice, and professional preparation, MSAT graduates will be equipped to enter the athletic training workforce with minimal

additional training required.

Are there private sector partners in creating/offering the project?

At this stage of the project, Dickinson State University does not yet have formal private sector partnerships in place but is actively laying the groundwork for future collaboration. The university is currently in the process of hiring a program director who will take the lead in establishing formal agreements with private sector partners, including hospitals, clinics, and school systems. These anticipated partners are expected to contribute by providing clinical education sites for hands-on student training, offering internship and job placement opportunities upon graduation, serving on advisory boards to ensure the curriculum aligns with real-world expectations, and supporting workforce needs by identifying high-demand areas and helping shape program outcomes to meet industry standards.

Is this project offered in partnership with another NDUS institution?

While there is no current formal partnership with another North Dakota University System institution, this program provides a valuable pathway for students seeking to complete graduate-level health sciences programs, including North Dakota State University's Occupational Therapy (OT) program. Dickinson State University is actively exploring opportunities to establish a formal partnership with NDSU that support seamless transitions into graduate health sciences programs. The development of this program aligns with and enhances ongoing efforts with NDSU to build collaborative pathways, strengthening student success to advanced degrees and expanding workforce readiness across the state.

Is this project already approved per SBHE policies and NDUS procedures?

Yes

Describe how the project is novel and innovative.

Dickinson State University submitted the program request in anticipation of seeking legislative appropriations to launch the initiative. The program also served as a representative example during the request for Workforce Innovation Funding. While the formal program approval process through NDSU is complete, this funding request specifically addresses the critical resource allocation gap necessary to implement the program effectively.

What makes this project novel and innovative is its alignment with workforce needs through the development of a graduate-level health sciences pathway in western North Dakota – an underserved region in terms of advanced healthcare education. The program is designed to not only prepare students for careers in athletic training and related fields, but also to create a foundation for future health sciences partnerships across the NDUS. By integrating hands-on clinical training, responsive curriculum design, and regional employer engagement, the project introduces a forward-thinking model that directly supports rural healthcare delivery and workforce development.

How will the project be sustained after WEIF Grant funding is expended?

The project will be sustained after Workforce Education Innovation Fund grant funding is expended through a combination of tuition and fee revenue generated from student enrollment and state funding formula payments tied to program enrollment. As student participation grows, these revenue streams will provide the necessary financial support to maintain and expand the program. This self-sustaining model ensures long-term viability by aligning operational costs with enrollment-driven funding, allowing the program to continue meeting workforce needs well beyond the initial grant period.

How will the project adapt over time to changing workforce needs and technological changes?

This project is designed with built-in flexibility to adapt to evolving workforce needs and technological advancements. Ongoing input from industry partners – through advisory boards, clinical site feedback, and employer surveys – will help ensure the curriculum remains aligned with real-world expectations. The program will regularly review labor market data to identify emerging trends and high-demand skill areas, making adjustments to course content and training opportunities as needed. Additionally, the incorporation of current and emerging technologies in both instructional delivery and clinical practice will be prioritized to ensure students are proficient with tools and methods used in modern healthcare settings. Continuous professional development for faculty and periodic program assessments will further support the program's responsiveness to industry changes, ensuring graduates remain competitive and well-prepared for the future workforce.

Application Number.

3

Institution.

Dickinson State University

Applicant Name.

Dr. Holly Gruhlke

Applicant Title.

Vice President of Academic Affairs and Provost

Applicant Department.

Academic Affairs

Project Title.

Bachelor of Science in Cybersecurity and Artificial Intelligence at Dickinson State University

Briefly describe the proposed project.

Dickinson State University proposes the development of a Bachelor of Science in Cybersecurity and Artificial Intelligence (BS-CSAI). This innovative academic program is designed to address critical workforce shortages in high-demand technology sectors by preparing students for careers in cybersecurity and AI. The program uniquely integrates hands-on training in ethical hacking, AI programming, threat detection, and responsible AI use. It will feature a secure, air-gapped lab, specialized infrastructure, and partnerships with industry to offer internships, real-world datasets, and co-teaching opportunities. DSU is requesting \$600,000 through the NDUS Workforce Innovation Grant to launch and sustain the program during the 2025-2027 biennium.

Does the proposal meet the statutory guidance of N.D.C.C. 15-10-75?

Yes

Indicate which statutory objective this proposal will advance (as required by N.D.C.C. 15-10-75).

Curriculum Development; Equipment & technology purchases; Facility modifications and equipment installation; Hiring and training new and existing instructors

Briefly describe how the funds will advance the objectives.

The requested funds will directly support the launch and sustainability of the Bachelor of Science in Cybersecurity and Artificial Intelligence program by advancing key objectives in the following areas:

-Curriculum Development: Funds will support the creation of interdisciplinary coursework integrating cybersecurity and AI, including advanced modules in digital forensics, biometric spoofing, and AI-aided threat detection. Faculty time and resources for designing innovative, industry-aligned curriculum will be covered.

-Equipment and Technology Purchases: Funding will enable the purchase of specialized instructional technology, including secure server racks, AI testing tools, student and instructor workstations, threat simulation software, and virtualization infrastructure, ensuring hands-on, real-world training.

-Facility Modifications and Equipment Installation: Resources will support the buildout of a fully air-segmented, RF-shielded cybersecurity teaching lab, as outlined in Dr. Garner's facility design (attached). This includes secure instructional and server spaces that meet industry standards for training in high-security environments.

-Hiring and Training New and Existing Instructors: The grant will provide salary and benefits for two new faculty members with cybersecurity and AI expertise. It will also allow for adjunct or visiting expert support and provide training opportunities for faculty to stay current with evolving technology and workforce needs.

This comprehensive investment ensures that DSU can deliver a rigorous, scalable, and workforce-driven program aligned with North Dakota's economic development priorities.

When will the proposed project be ready to admit students?

Fall 2026

Amount of funding requested.

\$600,000

What other sources of funding or resources support the proposed project?

While no legislative appropriations have been previously designated specifically for the BS-CSAI program, Dickinson State University will leverage existing institutional resources and infrastructure supported by past STEM-related funding to help implement the program. These include:

-Existing STEM facilities and technology resources that can be expended or adapted for cybersecurity and AI instruction.

-Institutional support for long-term program sustainability through tuition revenue, funding formula payments based on student enrollment, and integration into DSU's academic and operational planning.

-Faculty expertise and leadership, particularly through Dr. Lee Garner, who has committed significant time and professional resources to the lab design and program framework.

-Donations from industry partners and professionals established through the DSU Heritage Foundation.

These combined resources will complement the requested Workforce Innovation Grant funds, ensuring successful program implementation and growth.

Which identified workforce development need will this project address?

The proposed project addresses a critical and growing workforce development need for training ed professionals in cybersecurity and artificial intelligence. Across the United States, tens of thousands of cybersecurity positions remain unfilled, and AI-related job postings are increasing at a rate of 74% annually, according to Lightcast data. In North Dakota, the demand for skilled professionals in these fields spans key sectors such as energy, finance, agriculture, healthcare, education, and government. Employers are actively seeking individuals who can secure digital infrastructure, analyze and respond to threats, and develop and responsibly implement AI tools. The Bachelor of Science in Cybersecurity and Artificial Intelligence program at Dickinson State University will directly meet these needs by preparing graduates for careers as cybersecurity analysts, AI developers, penetration testers, machine learning

specialists, and security engineers. Through hands-on, interdisciplinary training, the program will equip students with the technical expertise and applied skills necessary to support North Dakota's economic growth and digital resilience.

What are the project's metrics for success? How will these metrics be achieved?

The project's metrics for success focus on measurable outcomes tied to workforce development, student achievement, and program sustainability. Key metrics include:

1. Program Enrollment and Retention:

Metric: Enroll at least 10-20 students in the first year, growing to 80+ students within five years; annual retention benchmarks monitored.

Strategy: Implement strategic recruitment efforts, provide robust student support services, and ensure proactive faculty advising to promote persistence and program completion.

2. Graduate Employment Outcomes:

Metric: At least 80% of graduates employed in cybersecurity, AI, or related fields within six months of graduation.

Strategy: Cultivate strong industry partnerships, offer internships and real-world learning experiences, and provide dedicated career placement support.

3. Industry Engagement:

Metric: Active private-sector participation on the advisory board, increased internship placements, and use of employer-provided datasets and equipment.

Strategy: Maintain ongoing communication with industry stakeholders to align curriculum with workforce needs and foster meaningful collaboration.

4. Program Accreditation and Recognition:

Metric: Achieve all required program approvals and obtain relevant industry-recognized certifications or designations.

Strategy: Pursue and maintain accreditation standards through continuous curriculum enhancement and alignment with certification criteria.

How does the project support student retention in North Dakota to meet the needs of local industries?

The proposed Bachelor of Science in Cybersecurity and Artificial Intelligence (BS-CSAI) at Dickinson State University supports student retention in North Dakota by creating a clear and compelling pathway to high-demand careers in the state's growing technology sector. The program is designed to:

- Provide access to specialized, high-quality education in western North Dakota, reducing the need for students to leave the region to pursue degrees in emerging tech fields.
- Align with local industry needs, ensuring that graduates are job-ready for careers in cybersecurity and AI across sectors such as energy, healthcare, government, and manufacturing.
- Incorporate hands-on learning and internships through partnerships with private companies, which strengthens student engagement, builds professional networks, and increases the likelihood of that students will remain in-state after graduation.
- Offer stackable pathways from associate-level programs, enabling students to from nearby

institutions to transfer and complete their degrees without leaving North Dakota. By combining workforce relevance, regional accessibility, and industry integration, the program encourages students to complete their degrees locally and remain in-state to contribute to the digital security and innovation workforce.

How are the students supported by this project prepared to enter the workforce with minimal additional on-the-job training?

Students in the Bachelor of Science in Cybersecurity and Artificial Intelligence (BS-CSAI) program at Dickinson State University are prepared to enter their workforce with minimal additional on-the-job training through a combination of rigorous, applied learning and direct industry engagement. The project ensures job readiness by:

- Providing hands-on experience in a secure, industry-grade lab environment, including an air-gapped and RF-shielded cybersecurity teaching laboratory designed by Dr. Lee Garner. This environment mirrors real-world security settings and gives students practical exposure to tools, systems, and scenarios they will encounter on the job.
- Integrating real-world datasets and security appliances into coursework, ensuring students gain experience with the exact technologies and data environments used by employers.
- Offering advanced modules in drone forensics, mobile device analysis, biometric spoofing, and AI-aided threat detection – skills in high demand and typically learned only through job-based training.
- Engaging students in internships and capstone projects with private sector partners, where they apply their knowledge in real settings, receive mentorship, and develop professional competencies.
- Embedding ethical, legal, and technical competencies throughout the curriculum so students are not only technically skilled but also prepared to operate within regulatory and organizational frameworks.

Together, these components produce graduates who can immediately contribute to cybersecurity and AI operations without extensive onboarding, saving employers time and resources and increasing graduates' immediate value in the workforce.

Are there private sector partners in creating/offering the project?

Private sector partnerships will be integral component of the Bachelor of Science in Cybersecurity and Artificial Intelligence (BS-CSAI) program at Dickinson State University, and several are currently under development with local IT firms and industry partners. These collaborators are expected to contribute in the following ways:

- Advisory board participation: Industry representatives will help shape the curriculum to ensure alignment with current workforce needs and emerging technologies in cybersecurity and AI.
- Internship placements: Companies will provide opportunities for students to gain practical experience in professional settings, preparing them for seamless entry into the workforce.
- Real-world resources: Partners will supply datasets, security appliances, and case studies to be used in coursework and lab simulations, enhancing the realism and relevance of student training.
- Guest instruction and mentorship: Industry professionals may guest lecture specific modules or serve as mentors, connecting students to real-world insights and career pathways.
- Employment pipelines: These partnerships are anticipated to lead to direct hiring pipelines, strengthening regional retention of skilled graduates.

As these relationships formalize, they will ensure the BS-CSAI program remains dynamic, responsive to industry trends, and strongly connected to North Dakota's evolving technology workforce needs.

Is this project offered in partnership with another NDUS institution?

This project is not currently offered in partnership with another North Dakota University System (NDUS) institution. However, Dickinson State University is open to future collaboration, particularly in creating transfer pathways for students with two-year degrees interested in cybersecurity and artificial intelligence.

Potential partnerships may include:

- Articulation agreements with institutions such as Williston State College or other NDUS community colleges, allowing students who complete associate degrees in related fields (e.g., information technology, computer science, or cybersecurity) to transfer seamlessly into the BS-CSAI program at DSU.
- Shared curriculum development or stackable credential models, where lower-division courses taken at partner institutions can be credited toward the DSU bachelor's degree.

These collaborations would expand across to the program, support student retention within NDUS, and strengthen the regional talent pipeline in high-demand technology fields.

Does this project support a program already approved per SBHE policies and NDUS procedures?

No

If not previously approved, is the project unique in the NDUS system?

Yes, the proposed Bachelor of Science in Cybersecurity and Artificial Intelligence (BS-CSAI) is unique within the NDUS system. While individual cybersecurity programs exist at other NDUS institutions, the program is the first to combine both cybersecurity and artificial intelligence in a single, integrated bachelor's degree.

This uniqueness is demonstrated through:

- Integrated curriculum design that blends network security, ethical hacking, machine learning, AI programming, and threat detection – going beyond traditional IT or computer science degrees.
- Specialized lab infrastructure, including a fully air-gapped and RF-shielded cybersecurity lab, designed specifically for secure, high-level student training.
- Advanced and emerging technology focus, such as drone forensics, biometric spoofing, and AI-aided threat detection, which are not typically offered in existing NDUS programs.

In the event that elements of the program may overlap with other offerings, duplication is justified due to:

- DSU's geographic location in western North Dakota, providing access to students who might not otherwise be served by existing programs in the eastern part of the state.
- Industry-driven design and rural workforce alignment, ensuring that the program responds to regional needs and supports economic diversification.

Overall, the BS-CSAI program fills a critical and previously unmet niche within NDUS, both in its academic content and its strategic service to western North Dakota.

Describe how the project is novel and innovative.

The Bachelor of Science in Cybersecurity and Artificial Intelligence (BS-CSAI) at Dickinson State University is novel and innovative in both its design and deliver, representing a first-of-its-kind program in the North Dakota University System (NDUS). Its innovation is demonstrated in the following ways:

- Integrated curriculum across two high-demand fields: Unlike traditional degrees that focus solely on cybersecurity or artificial intelligence, this program combines both disciplines into a unified academic pathway. Students gain expertise in ethical hacking, threat detection, AI programming, machine learning, and secure systems design – all within one degree.
- Hands-on learning in a specialized environment: The program includes the use of a custom-designed, air-gapped and RF-shielded cybersecurity teaching lab, enabling students to engage in secure, real-world simulations without risking external network exposure. This lab was designed by Dr. Lee Garner, a recognized expert in the field.
- Focus on emerging technologies: The curriculum includes advanced modules in drone forensics, mobile device analysis, biometric spoofing, and AI-aided cyber threat detection – skills that are increasingly critical in modern digital defense but rarely offered at the undergraduate level.
- Industry-driven and regionally responsive: The program is shaped by local employer needs in sectors like healthcare, manufacturing, government, and energy. It is intentionally built to serve western North Dakota, expanding access to specialized tech education in an underserved geographic area.

How will the project be sustained after WEIF Grant funding is expended?

After the Workforce Enhancement Innovation Fund (WEIF) grant funding is expended, the Bachelor of Science in Cybersecurity and Artificial Intelligence (BS-CSAI) program at Dickinson State University will be sustained through a combination of:

- Tuition and fee revenue generated from student enrollment. As a high-demand, career-focused program, BS-CSAI is expected to attract strong enrollment from both traditional and non-traditional students seeking careers in cybersecurity and AI.
- State funding formula support, which allocates resources based on student credit hours and degree completions. Given the program's alignment with workforce needs and anticipated student success, it is expected to contribute positively to DSU's overall funding formula metrics.

How will the project adapt over time to changing workforce needs and technological changes?

The Bachelor of Science in Cybersecurity and Artificial Intelligence (BS-CSAI) program at Dickinson State University is intentionally designed to be adaptive and responsive to evolving workforce demands and technological advancements. The project will remain current through the following strategies:

- Ongoing industry engagement: An advisory board composed of private sector partners, IT firms, and public agencies will provide regular input on emerging skills, tools, and job requirements, ensuring the curriculum revolves with real-world expectations.
- Modular and flexible curriculum design: Courses are structured to allow for the rapid integration of new topics such as generative AI, quantum-safe encryption, blockchain security, and emerging forensics techniques. This adaptability ensures students are learning current and future-relevant content.
- Lab and infrastructure scalability: The secure teaching lab – designed with modular components and virtualization capabilities – can accommodate upgrade in simulation software, cloud platforms, and AI tools as technologies advance.

-Faculty expertise and professional development: Faculty, including lead designer Dr. Lee Garner, are encouraged to stay current through research, professional certifications, and partnerships with national cybersecurity and AI organizations, bringing up-to-date knowledge directly into the classroom.

-Data-driven program review: Enrollment trends, employment outcomes, and feedback from employers and graduates will be used to assess and revise the program annually to align with workforce shifts.

Together, these mechanisms ensure the BS-CSAI program remains cutting-edge, equipping students with the evolving skillsets needed to thrive in rapidly changing digital environments.



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DRAFT VERSION 1.9.1. 08 June 2025

ABSTRACT

This is overview of what equipment is needed for a cybersecurity lab and within the professor's office, today's current industry needs for a university cybersecurity classroom/ laboratory, that is at the forefront of teaching cybersecurity to university students, including being able to be utilized for network security and future modules coving all aspects of cybersecurity. Including extra advanced classes and evening/ weekend classes, as well as remote teaching.

Dr Lee E Garner

THIS DOCUMENT IS DESIGNED ONLY AS A STARTING POINT, AND NOT AN COMPLETE CHECKLIST TO FOLLOW.

Sunday, June 8, 2025

Hello,

Setting up a new or even an existing cybersecurity Classroom / lab within a university requires a mix of knowledge, hardware, software, and networking equipment that can support a wide range of cybersecurity attack and defense activities, from ethical hacking and digital forensics to malware analysis and firewall and system penetration testing for undergrad and postgrad including doctoral students.

Due to the lack of full on-site knowledge and information regarding what new or used equipment the university currently possesses or has already been allocated to the cybersecurity program, this document has been developed with the assumption that a new classroom / lab will be constructed. The proposal will include an equipped classroom, a server room, and professors' offices. Existing cybersecurity lab equipment can be incorporated as needed, and this document may also serve as a reference checklist for available equipment.

The layout of the classroom / lab and the server room/area is just as important as the hardware itself.

Where feasible, at least one classroom/ laboratory, or a set area within the classroom/lab should be outfitted as a controlled electromagnetic environment utilizing induction deflection (e.g., a Faraday shielded enclosure, or the lab should be faraday painted, and windows screened).

This space would be used for advanced cybersecurity testing involving electromagnetic isolation, which may include radio frequency (RF) shielding to prevent signal leakage or external interferences.

Additionally, a secondary set area within the classroom / lab should be equipped with a mobile induction deflection unit, such as a portable Faraday tent. This mobile setup would support forensic analysis and testing of mobile devices within an RF-isolated environment, particularly for tasks like mobile phone signal interception analysis, data extraction, or malware reverse engineering under controlled shielded conditions.

While these capabilities align with more advanced stages of cybersecurity and may not currently be part of the formal curriculum, incorporating such infrastructure would ensure future readiness for expanded research and instructional use.

As this document has been written by Dr Lee E Garner, the knowledge that Dr Garner has within the field of the above concepts, including all future concepts listed within this document, to be implemented in a seamless structure.

As with the layout / setup of new equipment within the classroom and server room or area, the layout of the servers and the racks is important and should be designed in the first instance.

Some of the considerations that need to be at the forefront are.

1. How Many classrooms / laboratories will be assigned to the cybersecurity department.
 - This document looks at a single classroom, in the first instance.
2. The server room is a set area in its own room or a set aside area within the classroom.
 - The server racks are of a stand-alone type, with power units and patch panels and fans.
3. How many students to be in the class at any one time to allocate access ports per desk.
 - NOTE, the number of students is only controlled by the classroom size and equipment.
4. In the classroom/laboratories there should be desktops and monitors for the students to use if needed.
 - These are static units that cannot be moved.
5. What equipment is already owned by the university that can be reassigned for the cybersecurity department's sole use.

The purchasing of used equipment is recommended to offset costs, as well as the purchase of other vendor equipment such as Juniper, HP, allowing for cross-vendor knowledge for the students.

The recommendations in this document for the classroom / lab including the professor's office including the infrastructure layout, furniture, and specialized equipment, are based on configurations that have been implemented in performance cybersecurity teaching environments.

These recommendations draw from the extensive experience of Dr. Lee E. Garner, who has overseen designs and deployment of cybersecurity advanced educational laboratories across multiple sectors, including academic institutions and private industry training classrooms / labs.

Dr. Garner's work has focused on optimizing learning environments for cybersecurity instruction, integrating both pedagogical needs and evolving technical requirements. Highlighting the designs for emphasizing modularity, secure network closed loop and Air segmentation, environmental control for sensitive equipment, and ergonomic considerations to support both students and faculty.

The equipment lists and spatial layouts proposed here reflect industry-aligned standards, incorporating though lessons learned from past deployments to ensure budget scalability, technical relevance, and operational efficiency in a modern cybersecurity academic setting.

With this recommendation It would be important to emphasize the need for onsite verification, so that adjustments could be made to this document, this cannot be understated for the start of the building of the classroom and server room and professor's office.

While this document try's to provides an in-depth overview of initial acquisition of essential equipment to support the development of a state-of-the-art cybersecurity classroom / laboratory. The proposed equipment has been selected to meet today's industry standards and looked at addressing the need to progress a leading university-level cybersecurity program to be the envy of other universities.

The cybersecurity department facility has to be versatile, supporting a wide range of undergraduate and postgraduate courses within the cybersecurity concept defined by the attacking and defence of cybersecurity concepts.

It will also accommodate advanced instruction, including evening and weekend sessions, specialized testing, and student tutoring or tuition support programs, given the nature of the equipment and its use in security sensitive testing and training including forward research, proper monitoring, inventory control, and physical and network security measures should be prioritized to protect institutional assets and maintain academic integrity.

- As this is a new building of a cybersecurity classroom/lab and server room, the wiring and construction/setup and installations of software and hardware, can be done in part by the incoming professor, as he will have the expertise and knowledge for the wiring / cabling, and the building of the systems for the labs.
- The installation of cameras, within the racks and GPS units with any external hardware that is not locked within the cabinet should be considered.
- The limitation of the personnel that has access to the server cabinets is an added layer of security on the devices and hardware.

The costing matrix tables are shown in Appendix A. These tables include the cost of the equipment listed within this document, including links to possible vendor URLs.

The costs DO not consider any discounts in respect to universities or package discounts.

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Section 1.01 Teaching office Layout & Size.

The professor's office is not just a place for the professor to sit when not in the classroom, but is a place where he will test equipment, write reports on the tested equipment construct bolt on classes so that the newfound knowledge is passed to the students, and construct delivery teaching methods of the tested equipment.

The office is where the students can come and if needed have a discussion covering any aspect that the student feels is troubling them. And allowing the professor to show and explain any problems within the hardware or software that was covered in the classroom. Also, the office is where the professor can and does spend a lot of evenings and weekends so comfort has to part of the setup of the office, including going over classroom equipment building testing labs, conducting secure cybersecurity research testing, as well as base cybersecurity research, including the task of confirming that the labs that the student will be undertaking dos does not have any typos within the instructions. The professor's office will also function as a closed testing area that is secure as well.

(a) Professor's office.

The office should have a minimum of 18 m², this would allow for out-of-class instructions, as described above.

(b) The equipment that resides in the office would be the standard office items plus.

- Desktop units as it would be more powerful, than laptops, if a laptop is needed by the professor to transport data from the office to the classroom, I can use my laptop or an external drive if I need to transport files etc., I would like 3 x 22inch monitors for the Microsoft O/S unit for the desktop unit, the desktop will need to have to have a card to run the 3 monitors, for the Linux desktop, 2 x 22inch monitors.
- 1 SOHO unit for dynamic network connections.
- High back chair as the primary chair.
- A small table to meet with students and discuss concepts etc., including 2 chairs.
- The Linux desktop unit would be a totally separate unit, with 2 x 22-inch monitors, with the same hardware spec.
- Dule side enabled Printer within the office.
- Large whiteboard, as it will be used a lot, to explain things to students and to write code up.
- Lockable cabinets are just to keep things from getting lost.
- External Raid Box with Raid 5 unit with 5 x 4TB hard drives.
- Cisco router and cisco POE switch, watchdog firewall (these do not need to be new units)

That would give me 2 desktop computers 1 with 3 monitors and 1 with 2 monitors, the O/S would be windows 11 on the desktop with the 3 monitors and the Linux on the desktop with 2 monitors.

Section 1.02 Classroom Lab Layout & Size.

(a) The optimal classroom lab size.

Cybersecurity teaching classroom/Lab 90-110 m2, this would include space for servers if a server room were not attached as well as group tasks and activity.

- Within the classroom there must be large, fitted viewing monitors linked to the teaching podium computer, for teaching the class and to display information to the students within the classroom.
- The base office equipment is the same as a normal classroom, projection system, instructor desktop, whiteboard, etc.
- Links to the server cabinet via cable management.
- Student workstations as described in [Section 1.07](#).

Section 1.03 Server room (located as a separate room, or a set area within the classroom)

Possible costing and vendor links is shown in [Appendix A](#) for this section.

The server area or server room needs to be of an area that allows for full access to the server racked equipment, this area can be part of the classroom, as the server cabinets will be locked with restricted access.

The 2 x standalone cabinet racks will house all the hardware equipment used within the classroom and will connect to the classroom via a management cable system and connect with the server racks via patch panels.

(a) Rack Cabinets 2 x (standalone)

Model: APC 42U Quantity: See Note: (01)

Technical Specifications:

Rack Height: 42U Depth: At least 1000mm

Width: Standard 19-inch rack compatibility

Material: High-quality steel with anti-corrosion coating Doors: Front and rear, lockable, perforated for airflow Ventilation: Built-in ventilation with optional fan installation Cable

Management: Vertical and horizontal cable organizers Load Capacity: At least 1000 kg

Power Distribution: Compatible with PDU installation

Mounting: Floor-standing with adjustable leveling feet and casters Color: Black

Section 1.04 Classroom Hardware Located in the Server Racks.

Possible costing and vendor links is shown in [Appendix A](#) for this section.

(a) Router Hardware

Model: Cisco ISR 4331 & 4331 & another vendor

Quantity: See Note: (01)

Technical Specifications:

Performance: at least 500 Mbps

Processor: Multi-core with hardware encryption support RAM: Minimum 4 GB

Storage: Minimum 8 GB flash memory

Interfaces: Minimum 4 x 1G RJ-45 (WAN/LAN) and 2 x SFP+ VPN Support: IPSec, SSL, GRE, DMVPN

Security Features: Firewall, IDS/IPS, NAT, ACL Management: CLI, Web UI, SNMP, NETCONF

Ethernet port: Gigabit Ethernet

VoIP Supported: Yes

Rack mounting option: Yes, Compatible Rack Unit: 1U

(b) Layer 3 Switch Hardware (1)

Model: Cisco Catalyst 9200 & 9200 & another Vendor

Quantity: See Note: (01)

Technical Specifications:

Performance: At least 176 Gbps switching capacity Processor: Multi-core with hardware-based forwarding RAM: Minimum 4 GB DDR4

Storage: Minimum 16 GB flash memory

Interfaces: Minimum 24 x 1G RJ-45 and 4 x 10G SFP+ uplink ports Layer 3 Features: OSPF, BGP, EIGRP, RIP, VRF-Lite, PBR

Security Features: 802.1X, MACsec, TrustSec, DHCP Snooping, Dynamic ARP Inspection

Management: CLI, Web UI, SNMP, NETCONF, REST API

Ethernet Ports: Gigabit Ethernet

Stacking Support: Yes (Cisco StackWise technology) Power over Ethernet (PoE+): No

Rack Mounting Option: Yes, Compatible Rack Unit: 1U

(c) Layer 3+ Switch Hardware (2)

Model: Cisco Catalyst 9300 & another Vendor

Quantity: See Note: (01)

Technical Specifications:

Performance: At least 640 Gbps switching capacity Processor: Multi-core with hardware-based forwarding RAM: Minimum 8 GB DDR4

Storage: Minimum 16 GB flash memory

Interfaces: Minimum 48 x 1G RJ-45 (PoE+ supported), 4 x 10G SFP+ uplink ports

Layer 3 Features: OSPF, BGP, EIGRP, RIP, VRF-Lite, PBR, MPLS

Security Features: 802.1X, MACsec, TrustSec, DHCP Snooping, Dynamic ARP Inspection

Management: CLI, Web UI, SNMP, NETCONF, REST API

Ethernet Ports: Gigabit Ethernet

Stacking Support: Yes (Cisco StackWise-480 technology) Power over Ethernet (PoE+): Yes (up to 1440W PoE budget) Redundancy: Dual power supply support

Rack Mounting Option: Yes, Compatible Rack Unit: 1U

(d) Layer 2 Switch Hardware (3)

Model: Cisco Catalyst 2960L you need to split this with 2960x & another Vendor.

Catalyst 2960L Quantity: See Note: (01)

Catalyst 2960x Quantity: See Note: (01) Technical Specifications:

Performance: At least 50 Gbps switching capacity Processor: Hardware-based switching fabric RAM: Minimum 512 MB

Storage: Minimum 512 MB flash memory

Interfaces: Minimum 24 x 1G RJ-45 and 2 x 10G SFP uplink ports Layer 2 Features: VLAN, STP, RSTP, MSTP, LACP, IGMP Snooping

Security Features: 802.1X, Port Security, DHCP Snooping, Dynamic ARP Inspection

Management: CLI, Web UI, SNMP, NETCONF, REST API

Ethernet Ports: Gigabit Ethernet Fanless Design: No

Rack Mounting Option: Yes, Compatible Rack Unit: 1U

Section 1.05 Server Hardware Located in the Server Racks.

Possible costing and vendor links is shown in Appendix A for this section.

Model: Dell PowerEdge R630 needs to split with a R740 Dell PowerEdge R630 Quantity:

See Note: (01)

Dell PowerEdge R740 Quantity: See Note: (01) Technical Specifications:

Factor: 1U & 2U Rack

Processor: Intel Xeon E5 v4, at least 8 cores

RAM: Minimum 32 GB DDR4 (expandable up to 768 GB) Storage: Minimum 2 x 960 GB

SSD (hot-swappable) Storage Bays: Up to 8 x 2.5" drives (SAS/SATA/SSD)

RAID Support: PERC H730 RAID Controller (RAID 0, 1, 5, 6, 10, 50, 60)

Network Interfaces: 2 x 1G RJ-45, 2 x SFP+ (10G)

Power Supply: Redundant hot-swappable PSUs (550W or higher) Management: iDRAC8

Enterprise, CLI, Web UI, SNMP

Operating System Support: Windows Server, Linux (Ubuntu, CentOS, Red Hat), VMware

ESXi

Security Features: TPM 2.0, Secure Boot, System Lockdown Cooling: Intelligent fan control with hot-swappable cooling modules Rack Compatibility: Standard 19-inch rack, 1U height

Section 1.06 DMZ Hardware

Possible costing and vendor links is shown in Appendix A for this section.

The importance of the DMZ (Demilitarized Zone) structure that is implemented via hardware like routers, firewalls, and switches is not just for the protection of the classroom but for several key reasons.

Where in the real world the classroom DMZ will mimic the architecture used in real enterprise environments. Allowing students to implement and practice configuring secure networks, simulating exposing public services (like web and mail servers), including the planning of isolating them from internal networks. Teaching how the different types of dmz zones (internal, external, hardware and software) interact and learn to applying access controls and firewall rules though.

Looking at how the threat actor uses the knowledge of DMZ to attack the networks.

The DMZ should be a separate firewall or router or switch, with at least 4 – 8 ports

Section 1.07 Firewall Hardware Located in the Server Rack

Possible costing and vendor links is shown in Appendix A for this section.

The lab should have access to at least 3 different hardware vendor firewalls from the list below.

Fortinet FortiGate 60F

Palo Alto Networks PA-220 for intrusion prevention, VPN, and application-level security.

Watchguard

Checkpoint

Cisco

pfSense: An open-source firewall solution for lab environments

Section 1.08 Wireless Access Point Hardware in the classroom & Server Room

Possible costing and vendor links is shown in Appendix A for this section.

Ubiquiti UniFi UAP-AC-PRO or Aruba Instant IAP-305 for simulating Wi-Fi security issues
Network Interface Cards (NICs): different vendors
SOHO units, See Note: (01) (for closed network attack simulations)

Section 1.09 Cables

Possible costing and vendor links is shown in Appendix A for this section.

Console Cable

- Model: Cisco Console Cable
- Console Cable 6ft with USB Type A and mini-USB Type B
- Console Cable USB-C type
- Console Cable 6ft with RJ45 and DB9F
- Quantity: 18 units (various types as above)
- Technical Specifications:
- Interface: USB to mini-USB, USB-C, RJ-45 to DB9F
- Length: 6ft
- Material: Durable PVC coating
- Color: Blue (Cisco standard)

Straight and crossover cables.

- Quantity: See Note: (01)
- Interface: RJ-45 to RJ-45
- Color: different colors 2 X Reels of Cat 7
- RJ-45 Male ends (Box)

Section 1.10 Serial WAN Interface Cards

Possible costing and vendor links is shown in Appendix A for this section.

- Model: 2-Port Serial WAN Interface Card Quantity: 8 units depending on builds, Cable Requirements:
- V.35 Cable:
- DTE Male to Smart Serial, 10 Feet
- DCE Female to Smart Serial, 10 Feet
- Technical Specifications:
- V.35 cable compatibility for serial WAN connections

Section 1.11 Professors' office Workstations.

Possible costing and vendor links is shown in Appendix A for this section.

- 2 x High-performance desktop
- Minimum: Intel i9/Ryzen 9, 64 GB RAM, 2TB SSD, and support for virtualization (VT-x/AMD-V).
- 2 x 22 in Monitors for the Linux desktop
- 3 x 22 in monitors for the Windows desktop
- 2TB secondary SSD/HDD for data, logs, or datasets
- GPU (for malware reverse engineering or ML-based security tools).
- Raspberry pie 5 x stack unit.
- Faraday large Bag, for securing mobile devices or drives.

Section 1.12 Student Workstations

Possible costing and vendor links is shown in Appendix A for this section.

- High-performance desktops
- Minimum: Intel i7/Ryzen 7, 24–32 GB RAM, 1TB SSD, and support for virtualization (VT-x/AMD-V).
- Preferred: Dual boot (Windows/Linux) to run virtual machines.
- GPU (optional but helpful for malware reverse engineering or ML-based security tools).

Section 1.13 Raspberry Pi Cluster for classroom Labs

Possible costing and vendor links is shown in Appendix A for this section.

Reasoning to Simulate IoT security environments, including microservices deployment, edge security.

- Raspberry Pi 3 Model B+ (in 5-node stacks)
- PoE HATs, SSDs, Ubuntu Server, Raspbian

Section 1.14 Virtualization Infrastructure installed within the server unit

Possible costing and vendor links is shown in Appendix A for this section.

Reasoning to create isolated environments for security experiments and attacks.

- VMware vSphere ESXi or Microsoft Hyper-V for managing and running virtual machines on the servers.
- Proxmox VE or VirtualBox for hypervisors and container environments.
- Docker for containerization, and Kubernetes for managing containerized applications in a cloud-like environment.

Section 1.15 Other Equipment

Possible costing and vendor links is shown in Appendix A for this section.

Hardware.

- Arduino kits (needed for classroom)
- Docker server (needed and located in the server rack)
- Router: Cisco ISR 4331 or MikroTik CCR1009-7G-1C-1S+ for routing and firewall configurations on the fly, (located in the professor's office)
- 2 x External USB SSD drive 2TB.
- Number of USB Flash drives for students to use for testing.

Section 1.16 Security Tools & Software installed.

Possible costing and vendor links is shown in Appendix A for this section.

Reasons to provide students with practical cybersecurity skills, all as loaded Images on a sever and flash drives, these tools will change and be added to the list as the classroom takes shape. These images will be pre-installed on the classroom workstations, as well as installed on flash drives

- Kali Linux: Loaded with penetration testing tools. (imaged)
- Wireshark: For network packet analysis.
- Metasploit Framework: For vulnerability testing and exploitation.
- Snort or Suricata: For Intrusion Detection/Prevention Systems (IDS/IPS).
- Nmap: Network scanner for vulnerability and network mapping.
- Burp Suite: Web application security testing platform.
- Security Onion: A complete network monitoring solution for intrusion detection.

Section 1.17 Classroom Lab Equipment for testing exercises.

Possible costing and vendor links is shown in Appendix A for this section.

Attack /Defense Teams & Wireless Tools Lab.

Ethical hacking, wireless recon, RFID/NFC exploits, BLE testing,

Hak5 Pentest Gear

- Wi-Fi Pineapple – Wireless auditing and rogue AP simulation
- LAN Turtle – Remote access over LAN
- Bash Bunny – HID attacks via USB
- Packet Squirrel – Inline packet sniffing
- Shark Jack – Ethernet-based attack automation

Wireless Tools

- Flipper Zero – Multi-tool for RFID, NFC, GPIO, IR, Sub-GHz testing
- Proxmark3 RDV4 – Advanced RFID/NFC sniffing and cloning
- ESP32 Marauder – Wi-Fi/Bluetooth scanner with packet injection
- OMG Cable Elite – USB keystroke injection and payload delivery
- HackRF One – SDR for RF fuzzing, GPS spoofing, signal analysis
- Ubertooth One – BLE sniffing and MITM attack tool
- RTL-SDR Kits – Low-cost SDR learning tools for RF protocols

Section 1.18 Simulation & Toolkit Lab Equipment

Possible costing and vendor links is shown in Appendix A for this section.

Replicate networks, run attacks, simulate SIEM alerting, conduct forensic analysis.

- GNS3, EVE-NG, Cisco Packet Tracer
- Kali Linux, Metasploit, Burp Suite Pro, Nessus
- SolarWinds Engineer's Toolset – Switch Port Mapper, SNMP Tools, NetFlow
- Splunk, ELK, Security Onion
- Autopsy, Cuckoo Sandbox, REMnux

Section 1.19 Simulators and Virtual Labs and Faraday Cage Lab

Possible costing and vendor links is shown in Appendix A for this section.

Reason to simulate real-world attack scenarios, network configurations, and defenses.

- Cisco Packet Tracer or GNS3 for network design and simulation.
- Cyber Range platforms for real-time penetration testing and defense exercises.
- Faraday paint and copper mesh sheets to build the classroom into a faraday cage for secure testing.
- Faraday Tent for mobile light secure testing areas
- AI sandbox for testing.
- 3D filament printer
- 3D resin printer
- CNC desktop milling unit

Section 1.20 Security Appliances

Possible costing and vendor links is shown in Appendix A for this section.

Reason to provide practical experience with various security devices.

Recommendations.

- IDS/IPS Devices:
 - Cisco Firepower 1010 or Palo Alto Networks PA-220.
- SIEM Systems:
 - Splunk Enterprise for analysing security events.
 - ELK Stack (Elasticsearch, Logstash, Kibana) for open-source log aggregation and analysis

Section 1.21 Storage Infrastructure Solutions

Possible costing and vendor links is shown in Appendix A for this section.

Reasons to store and manage large datasets, backups, and security logs, including virtualization.

- Synology DiskStation DS920+ for NAS storage.
- NetApp AFF A220 for enterprise-level SAN storage solutions.
- Use Amazon S3 or Azure Blob Storage for cloud-based backups and storage options via external closed loop access.
- External raid boxes for each classroom/laboratory locked within the racks for imaging within the classrooms by students as part of the student's studies.
- Supermicro SYS-510P-WTR – Docker & Kubernetes
- Use: Container security, DevSecOps training, CI/CD scanning
- Intel Xeon Silver 4314, 128GB RAM, 4× 2TB SSD RAID 5
- Synology RS1221+ – NAS
- Use: Host VM images, lab ISOs, class data backups, digital evidence storage
- 8× 8TB WD Red Pro (RAID 5)

Section 1.22 Monitoring and Logging Software Tools

Possible costing and vendor links is shown in Appendix A for this section.

Reason for teaching students about network traffic, logs, and incident response.

Recommendations.

- Wireshark or Tcpcdump for capturing and analysing network traffic.
- Nagios Core or Zabbix for network and service monitoring.
- Syslog Servers for aggregating and centralizing log data, such as Gray log or LogRhythm.

Section 1.23 Lab Management & Automation.

Possible costing and vendor links is shown in Appendix A for this section.

Reason to efficiently manage resources, labs, and assignments.

Recommendations.

- Netlab+ or Cyber Range for lab management and automation.
- GitHub or GitLab for collaborative assignments, version control, and team-based projects.

Section 1.24 Internet limited Access & Loop Security

Possible costing and vendor links is shown in Appendix A for this section.

Reason to securely connect the lab to the internet and provide controlled access for research and updates.

- Cisco ASA 5506-X or FortiGate 60F for managing secure access and VPNs.
- Ubiquiti Edge Router 4 for cost-effective routing and security

Section 1.25 Network and cybersecurity Testing Equipment

Possible costing and vendor links is shown in Appendix A for this section.

1. Fluke and other vendors testing equipment would need to see what network equipment is already on site and can be used.
2. Inspection of equipment that is already on site and being used in the classrooms for network security studies.

Section 1.26 Cloud Platforms

Possible costing and vendor links is shown in Appendix A for this section.

To introduce students to security aspects of the Pros and Cons of cloud-based infrastructure and security practices.

Recommendations.

Use Amazon Web Services (AWS), Microsoft Azure, or Google Cloud Platform (GCP) for setting up cloud-based virtual labs.

Consider AWS Educate or Azure for Education to offer students free or discounted cloud resources for hands-on exercises.

Section 1.27 Threat Actors Equipment

It is very important to have this equipment to understand how attacks take place, including how the equipment works, this is the primary step to defending against the attack from such equipment. The cybersecurity professor will have a list of what tools should be purchased by the university for classroom use. These tools will be GPS locked in security measures and only be used under direct supervision, within the faraday classroom.

1. The cybersecurity professor will have his own list of tools that is being used by today's hackers,
2. The cybersecurity professor will also have a range of hardware equipment of his own to bring to the classroom, to show to the students.
3. The equipment that is needed for this chapter could be an exhausting list, if not prepared by the cybersecurity professor as he will focus on what is being covered, and this would be built by the university over time as the university purchases kit.

Section 1.28 Purpose of All Labs

This equipment document is designed to equip a Cybersecurity & Network security classroom with all the necessary tools for:

1. 24/7 access for students to attempt the labs out of the classroom
2. Real-world simulations of enterprise and home networks
3. Hands-on ethical hacking and red teaming
4. Digital forensics (mobile, desktop, drone)
5. Biometric & RFID security evaluation
6. Wireless and SDR experimentation
7. GPS & AIS cybersecurity analysis
8. Custom hardware fabrication and analysis via 3D printing
9. Preparation for cybersecurity certifications and job roles

Section 2.01 Cybersecurity Additional syllabus Modules.

Possible costing and vendor links is shown in Appendix A for this section.

(a) Biometric Security Lab Equipment

For cybersecurity testing and study of facial recognition, iris scanning, and spoofing via photos/masks.

Iris ID iCAM7000 – High-res iris scanner
Intel RealSense D455 – Depth-sensing for face training
Software: Luxand FaceSDK, Dlib, OpenCV, DeepFace

(b) 3D Printing & Custom Hardware Lab Equipment

1. Simulate tamper-resistant enclosures, custom USB devices, drone frame replicas, or attack tools
2. Clone lock mechanisms or security tokens
3. Model forensic evidence (device mounts, jigs, chassis)
4. Printers
5. 3D Filament Printer: Prusa i3 MK4 (FDM) – PLA/ABS, high-precision printing
6. 3D Resin Printer: Anycubic Photon Mono X 6K – UV resin for small electronics molds
7. 3D Platform Scanner: Revopoint POP 2 – Create CAD-ready 3D models of devices for replication
8. Software
9. Autodesk Fusion 360, PrusaSlicer, Chitubox, Meshmixer

(c) Drone Forensics & Signal Analysis Lab Equipment

Reason to teach cybersecurity forensic recovery from UAVs, locate signal weaknesses, reconstruct telemetry logs.

- Drones (Test Units)
 1. 6 x Solo Units (these are discontinued drones so are cheap to get)
 2. 2x DJI Mavic Air 2
 3. 1x Parrot Anafi
 4. 1x DJI Mini 2 (entry-level)
- Tools
 1. Drone Recovery Kit: JTAG debugger, SD card readers, drone frame openers
 2. OpenFlight Log Parser + Autel Explorer Viewer: UAV flight data log analysis
 3. HackRF One + GNURadio: Signal spoofing, telemetry interception
 4. DJI Assistant 2: Firmware and internal data analysis
 5. Faraday Drone Cage: Isolated RF testing enclosure
 6. DJI Flight Simulator: Pilot training and path recreation

(d) Mobile Device Security & Forensics Lab Equipment.

Reasoning to Analyze, intercept, and recover data from smartphones and tablets. Train on mobile app security.

1) Test Devices

7. 6x Android Phones (rooted Pixel 6a)
8. 4x iPhones (iOS SE – supervised mode)
9. 2x Android Tablets (Samsung A7)
10. 2x iPads (managed profile)

2) Tools

1. Cellebrite UFED 4PC – Logical + physical extractions
2. Magnet AXIOM Mobile – Mobile forensic suite with app-level analysis
3. Oxygen Forensic Detective – Cloud, backup, SIM, and app investigation
4. MobSF – Static and dynamic mobile application analysis
5. Frida & Objection – Live instrumentation and app bypass tools
6. ADB/Fastboot, iMazing, Apple Configurator – Device prep, bypass, backup
7. Burp Suite Pro – App API interception via proxy

(e) Crisis Response Simulation SOC Classroom.

This simulation structure has not been put in this document due to the cost of the installation, But it has been added to show that this concept was thought of and has been costed on a separate document.

Section 2.02 Regarding Posable Current and Future Budget Considerations.

With the Undergraduate levels they will need fewer servers, switches, and a mix of physical and virtual environments.

Postgraduate level, Focuses on more advanced tools and lab setups with deeper specialization (e.g., cloud security, advanced penetration testing).

This classroom/laboratory setup allows for both a solid foundation for undergraduate students and specialized training for postgraduate students. This also allows for extra students' classroom studies.

structure such as a cybersecurity class or for honor students doing advanced cybersecurity concepts.

The overall concept of this document is to focus on a setup or 1st time build for cybersecurity undergrad and postgrad degree related classes, including the preparation for industry exams using some parts of existing equipment already being used by the university, the purchasing of equipment for the new cybersecurity classes will allow the classes to be used for other network & network + classes.

The main concern is that the cybersecurity classroom must be seen as a secure classroom due to the nature of the software and hardware within the classroom and that is restricted to cybersecurity only.

The construction of the cybersecurity classes and the equipment must allow the cybersecurity classes to be air gaped from the universities internal network by a physical switch that has to be manually controlled, and any link needed from the closed loop network to the universities network would be airgap manually controlled at each classroom via a locked down patch panel link.

This document is written without seeing existing equipment or the size of the classroom or office or the budget for purchasing cybersecurity equipment, and as such this is a draft document and must be seen as a dynamic document.

Regards

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Section 2.03 Appendix

Appendix A, Costing Tables and Vendor links Matrix Tables.

(i) Server room Or Area.

Table 2.03.1 Standalone cabinet racks.

Vendor	Model	Price (USD)	Link	Notes
CDW	APC NetShelter SV 42U	\$2,063.99	View Product	42U, 800mm W x 1200mm D, includes sides, black finish
Dell	APC NetShelter SV 42U	\$2,351.65	View Product	42U, 800mm W x 1200mm D, includes sides, black finish
Newark	APC NetShelter SV 42U	\$2,929.90	View Product	42U, 800mm W x 1200mm D, includes sides, black finish
FireOwls Corporation	APC NetShelter SV 42U	\$2,298.10	View Product	42U, 800mm W x 1200mm D, includes sides, black finish
Microless	APC Easy Rack 42U	\$2,042.47	View Product	42U, 800mm W x 1200mm D, includes roof, side panels, casters, feet, 4 brackets, no bottom, black finish
Rackmount Solutions	Vericom 42U 42"D	\$1,279.00	View Product	42U, 800mm W x 1200mm D, includes sides, black finish

Key Features.

- Rack Height: 42U
- Depth: At least 1000mm
- Width: Standard 19-inch rack compatibility
- Material: High-quality steel with anti-corrosion coating
- Doors: Front and rear, lockable, perforated for airflow
- Ventilation: Built-in ventilation with optional fan installation
- Cable Management: Vertical and horizontal cable organizers
- Load Capacity: At least 1000 kg
- Power Distribution: Compatible with PDU installation
- Mounting: Floor-standing with adjustable levelling feet and casters
- Colour: Black

(ii) *Classroom Hardware Located in the Server Racks.*

(b) Router Hardware

Table 2.03.2 Router Hardware

Vendor	Model	Price (USD)	Link	Notes
3B Tech Solutions	ISR4331/K9	\$3,225	View Product	New, includes 3 ports and 6 slots
Zones	C1-CISCO4331/K9	\$4,237.99	View Product	New, rack-mountable, 3 WAN ports
Triton Datacom	ISR4331/K9	\$1,419.99	View Product	Refurbished, 3 onboard GE ports, 2 NIM slots
ServerBasket	ISR4331/K9	\$959	View Product	New, 4GB DRAM, 4GB Flash, up to 100 Mbps throughput
HardwareStorm	C1-CISCO4331/K9	\$159.99	View Product	Refurbished, 90-day warranty
Questivity	ISR4331/K9	\$1,841.76	View Product	New, 100–300 Mbps throughput, 2 WAN/LAN ports, 2 SFP ports
eBay (Various Sellers)	ISR4331-SEC/K9	\$1,186.64	View Product	New, 3 onboard GE ports, 2 NIM slots

Key Features.

- Performance: Supports up to 300 Mbps throughput with performance licenses.
- Processor: Multi-core CPU with hardware encryption support.
- Memory: 4 GB DRAM (upgradable to 16 GB) and 4 GB Flash (upgradable to 16 GB).
- Interfaces: 2 x 10/100/1000 RJ-45 ports, 2 x SFP ports, 1 x ISC slot, 2 x NIM slots.
- VPN Support: IPSec, SSL, GRE, DMVPN.
- Security Features: Firewall, IDS/IPS, NAT, ACL.
- Management: CLI, Web UI, SNMP, NETCONF.
- Rack Mounting: 1U form factor, rack-mountable

(a) Layer 3 Switch Hardware (1)

Table 2.03.3 Layer 3 Switch Hardware (1)

Vendor	Model	Price (USD)	Link	Notes
SecureITStore	C9200-24PXG-E	\$4,249.76	View Product	24-port, 8x mGig, 16x 1G, PoE+, Network Essentials
SecureITStore	C9200-48PXG-E	\$7,513.28	View Product	48-port, 8x mGig, 40x 1G, PoE+, Network Essentials
Network Devices Inc.	C9200L-24T-4X-E	\$1,435.00	View Product	24-port, 4x 10G SFP+, Network Essentials
Network Devices Inc.	C9200L-24T-4X-A	\$2,525.00	View Product	24-port, 4x 10G SFP+, Network Advantage
Amazon	C9200-24T-E	\$1,750.00	View Product	24-port, Network Essentials
Chicago Computer Supply	C9200L-24T-4G-E	\$1,197.99	View Product	24-port, 4x 1G SFP, Network Essentials
Chicago Computer Supply	C9200L-24T-4X-A	\$3,197.99	View Product	24-port, 4x 10G SFP+, Network Advantage
Derive Technologies	C9200-48P-1A-RF	\$4,559.00	View Product	48-port, PoE+, Network Advantage (remanufactured)

Key Features.

- Performance: Switching capacity of at least 176 Gbps.
- Processor: Multi-core with hardware-based forwarding.
- Memory: Minimum 4 GB DDR4 RAM.
- Storage: Minimum 16 GB flash memory.
- Interfaces: Minimum 24 x 1G RJ-45 and 4 x 10G SFP+ uplink ports.
- Layer 3 Features: Supports OSPF, BGP, EIGRP, RIP, VRF-Lite, PBR.
- Security Features: 802.1X, MACsec, TrustSec, DHCP Snooping, Dynamic ARP Inspection.
- Management: CLI, Web UI, SNMP, NETCONF, REST API.
- Stacking Support: Yes, with Cisco StackWise technology.
- Rack Mounting: Yes, 1U compatible.

(b) Layer 3+ Switch Hardware (2)

Table 2.03.4 Layer 3+ Switch Hardware (2)

Vendor	Model	Price (USD)	Link	Notes
SecureITStore	C9300-24UX-E	\$10,952.68	View Product	24-port 10G/mGig, modular uplinks, UPOE, Network Essentials
SecureITStore	C9300-48UXM-E	\$10,906.57	View Product	48-port 2.5G (12 10G/mGig), modular uplinks, UPOE, Network Essentials
Network Devices Inc.	C9300-24T-A	\$2,949.00	View Product	24-port 1G, modular uplinks, non-PoE, Network Advantage
Network Devices Inc.	C9300-48UXM-E	\$3,150.00	View Product	48-port 2.5G (12 10G/mGig), modular uplinks, UPOE, Network Essentials
SHI	C9300-48U-A	\$9,852.00	View Product	48-port 10/100/1000 (UPOE), rack-mountable, UPOE (822 W), Network Advantage
SHI	C9300-48UN-A	\$11,854.00	View Product	48-port 10/100/1000/2500/5000/10000 (UPOE), rack-mountable, UPOE, Network Advantage
Amazon	C9300-24UX-E	\$5,624.99	View Product	24-port 10G/mGig, modular uplinks, UPOE, Network Essentials

Key Features,

- Performance: Switching capacity of at least 640 Gbps.
- Processor: Multi-core with hardware-based forwarding.
- Memory: Minimum 8 GB DDR4 RAM.
- Storage: Minimum 16 GB flash memory.
- Interfaces: Minimum 48 x 1G RJ-45 (PoE+ supported), 4 x 10G SFP+ uplink ports.
- Layer 3 Features: Supports OSPF, BGP, EIGRP, RIP, VRF-Lite, PBR, MPLS.
- Security Features: 802.1X, MACsec, TrustSec, DHCP Snooping, Dynamic ARP Inspection.
- Management: CLI, Web UI, SNMP, NETCONF, REST API.
- Stacking Support: Yes, with Cisco StackWise-480 technology.
- Power over Ethernet (PoE+): Yes, up to 1440W PoE budget.
- Redundancy: Dual power supply support.
- Rack Mounting: Yes, 1U compatible.

(c) Layer 2 Switch Hardware (3)

Table 2.03.5 Layer 2 Switch Hardware (3)

Vendor	Model	Price (USD)	Link	Notes
Network Devices Inc.	C9300-48P-A	\$4,495.00	View Product	48-port 1G, PoE+, Network Advantage
Network Devices Inc.	C9300-48T-E	\$2,995.00	View Product	48-port 1G, non-PoE, Network Essentials
SecureITStore	C9300-48P-E	\$10,005.00	View Product	48-port 1G, PoE+, Network Essentials
SecureITStore	C9300-48UXM-E	\$10,906.57	View Product	48-port (12 mGig & 36 2.5Gbps), Network Essentials
Amazon	C9300-24UX-E	\$5,624.99	View Product	24-port 10G/mGig, UPOE, Network Essentials
Amazon	C9300-48P-A	\$5,624.99	View Product	48-port 1G, PoE+, Network Essentials

Key Features Summary:

- Performance: Switching capacity of at least 640 Gbps.
- Processor: Multi-core with hardware-based forwarding.
- Memory: Minimum 8 GB DDR4 RAM.
- Storage: Minimum 16 GB flash memory.
- Interfaces: Minimum 48 x 1G RJ-45 (PoE+ supported), 4 x 10G SFP+ uplink ports.
- Layer 3 Features: Supports OSPF, BGP, EIGRP, RIP, VRF-Lite, PBR, MPLS.
- Security Features: 802.1X, MACsec, TrustSec, DHCP Snooping, Dynamic ARP Inspection.
- Management: CLI, Web UI, SNMP, NETCONF, REST API.
- Stacking Support: Yes, with Cisco StackWise-480 technology.
- Power over Ethernet (PoE+): Yes, up to 1440W PoE budget.
- Redundancy: Dual power supply support.
- Rack Mounting: Yes, 1U compatible.

(d) Layer 2 Switch Hardware (3)

Table 2.03.6 Layer 2 Switch Hardware (3)

Vendor	Model	Price (USD)	Link	Notes
HardwareStorm	WS-C2960LV5-24TS-LL	\$393.41	View Product	24 x 10/100/1000 + 4 x Gigabit SFP, Managed, Rack-Mountable
HardwareStorm	WS-C2960LV5-24TQ-LL	\$429.04	View Product	24 x 10/100/1000 + 4 x 10G SFP+, Managed, Rack-Mountable
Amazon	WS-C2960X-24TS-L	\$249.00	View Product	24 x 10/100/1000 + 2 x 10G SFP+, Enhanced Limited Warranty
Amazon	WS-C2960X-48FPD-L	\$295.00	View Product	48 x 10/100/1000 + 2 x 10G SFP+, 740W PoE+, Enhanced Limited Warranty
Northland Systems	WS-C2960X-24TD-L	\$2,761.20	View Product	24 x 10/100/1000 + 2 x 10G SFP+, 216 Gbps Switching, 95.2 Mpps

Key Features Summary:

- Performance: Switching capacity of at least 50 Gbps.
- Processor: Hardware-based switching fabric.
- Memory: Minimum 512 MB RAM.
- Storage: Minimum 512 MB flash memory.
- Interfaces: Minimum 24 x 1G RJ-45 and 2 x 10G SFP uplink ports.
- Layer 2 Features: VLAN, STP, RSTP, MSTP, LACP, IGMP Snooping.
- Security Features: 802.1X, Port Security, DHCP Snooping, Dynamic ARP Inspection.
- Management: CLI, Web UI, SNMP, NETCONF, REST API.
- Ethernet Ports: Gigabit Ethernet.
- Fanless Design: No.
- Rack Mounting Option: Yes, Compatible Rack Unit: 1U.

(i) Firewall Hardware Located in the Server Rack

Table 2.03.7 Firewall Hardware Located in the Server Rack

Vendor	Model	Price (USD)	Link	Notes
Fortinet	FortiGate 60F	\$2,056.09	AVFirewalls	Includes 1-year Unified Threat Protection (UTP) and FortiCare Premium Support
Palo Alto Networks	PA-220	\$250.00	PaloGuard	Base model; subscription services available separately
WatchGuard	Firebox T25	\$429.99	CDW	Includes 1-year Total Security Suite
Check Point	60000 Series	\$2,000.00+	Check Point	Pricing varies; contact for quote
Cisco	ASA 5506-X	\$400.00	Cisco	Base model; subscription services available separately
pfSense	SG-1100	\$179.00	Netgate	Open-source firewall; hardware appliance options available

Key Features.

- FortiGate 60F: Offers comprehensive security features including IPS, AV, botnet protection, and more.
- PA-220: Compact form factor suitable for small environments; additional subscriptions required for full feature set.
- Firebox T25: Provides enterprise-grade security with optional Wi-Fi 6 support; includes Total Security Suite.
- Check Point 60000 Series: High-performance appliances suitable for large enterprises; pricing varies based on configuration.
- Cisco ASA 5506-X: Reliable security appliance with support for various VPN technologies; additional subscriptions required.
- pfSense SG-1100: Cost-effective open-source solution; hardware appliance options available for different needs.

(ii) Wireless Access Point Hardware in the classroom & Server Room

Table 2.03.8 Wireless Access Point Hardware in the classroom & Server Room

Vendor	Model	Price (USD)	Link	Notes
Ubiquiti	UniFi UAP-AC-PRO	\$149.00	Ubiquiti Store	Ceiling-mounted, Wi-Fi 5, 6 spatial streams, 1,500 sq ft coverage
Aruba	Instant IAP-305	\$295.00	IT Bargain Center	In-ceiling, Wi-Fi 5, 3x3 MIMO, 1.7 Gbps peak data rate
Aruba (Discounted)	Instant IAP-305 (US)	\$183.99	Chicago Computer Supply	In-ceiling, Wi-Fi 5, 3x3 MIMO, 1.7 Gbps peak data rate

Table 2.03.9 Network Interface Cards

Vendor	Model	Price (USD)	Link	Notes
Ubiquiti	UniFi UAP-AC-PRO	\$149.00	Ubiquiti Store	Ceiling-mounted, Wi-Fi 5, 6 spatial streams, 1,500 sq ft coverage
Aruba	Instant IAP-305	\$295.00	IT Bargain Center	In-ceiling, Wi-Fi 5, 3x3 MIMO, 1.7 Gbps peak data rate
Aruba (Discounted)	Instant IAP-305 (US)	\$183.99	Chicago Computer Supply	In-ceiling, Wi-Fi 5, 3x3 MIMO, 1.7 Gbps peak data rate

Key Features.

- Ubiquiti UniFi UAP-AC-PRO: Offers ceiling-mounted installation with Wi-Fi 5 support, 6 spatial streams, and coverage for up to 1,500 sq ft.
- Aruba Instant IAP-305: Provides in-ceiling installation with Wi-Fi 5, 3x3 MIMO technology, and a peak data rate of 1.7 Gbps.
- TP-Link Archer T4U AC1200: A USB 3.0 adapter supporting dual-band Wi-Fi 5 with speeds up to 1200 Mbps.
- Netgear Nighthawk AC1900: A USB 3.0 adapter supporting dual-band Wi-Fi 5 with speeds up to 1900 Mbps.
- ASUS USB-AC68: A USB 3.0 adapter supporting dual-band Wi-Fi 5 with speeds up to 1900 Mbps.

(iii) Cables

Table 2.03.10 cables

Vendor	Model/Description	Price (USD)	Link	Notes
Comprehensive	Cisco Console Management Cable RJ45 Male to DB9 Female	\$5.99	Comprehensive	Compatible with most Cisco devices with RJ45 console ports.
Tripp Lite	Cisco Serial Console Cable, RJ45, DB9F, 6ft	\$16.99	Zoro	Standard Cisco console cable.
DTech	DB9 to RJ45 Console Cable Cisco Device Management Serial Adapter	\$6.50	Amazon	Ultra-thin flat design, flexible and space-saving.
Network Hardwares	Cisco Console Cable 6ft with RJ45 and DB9F	\$36.85	Network Hardwares	Specifically designed for Cisco Catalyst 2960-S Series Switches.
Vendor	Model/Description	Price (USD)	Link	Notes
Cisco	Console Cable 6ft with USB Type A and Mini-B	\$83.00	Tech-America	Original Cisco part.
Aexus	Cisco Console Cable 6ft with USB Type A to Mini-B	\$15.85	Amazon	Compatible with Cisco devices.
Oikwan	USB-C Cisco Console Cable, 6ft	\$11.99	Amazon	Compatible with Cisco, NETGEAR, Ubiquity, LINKSYS, TP-Link routers/switches.
Vendor	Model/Description	Price (USD)	Link	Notes
Accortec	Console Cable with RJ45 and DB9F Cisco Compatible	\$30.15	Zoro	Cisco compatible console cable.
Cisco	Console Cable 6ft with RJ45 and DB9F	\$36.85	Network Hardwares	Original Cisco part.

(iv) Serial WAN Interface Cards

Table 2.03.11 Serial WAN Interface Cards

Vendor	Model	Price (USD)	Link	Notes
SHI	Cisco HWIC-2T	\$431.00	SHI	Compatible with Cisco 1841, 1921, 2900, 3800, and 3900 series routers.
ServerSupply	Cisco HWIC-2T (Refurbished)	\$200.00	ServerSupply	Refurbished unit with 90-day warranty.
HardwareJet	Cisco HWIC-2T (Refurbished)	\$108.95	HardwareJet	Refurbished unit with 90-day warranty.
eBay	Cisco HWIC-2T (New)	\$122.00	eBay	Brand new unit.
CablesAndKits	Cisco HWIC-2T	\$431.00	CablesAndKits	New unit with standard warranty.
Vendor	Model	Price (USD)	Link	Notes
CablesAndKits	CAB-SS-V35MT (DTE Male to Smart Serial)	\$22.99	CablesAndKits	Standard 10ft cable for DTE devices.
CPUMedics	CAB-SS-V35MT (DTE Male to Smart Serial)	\$78.75	CPUMedics	Refurbished unit with 30-day warranty.
CPUMedics	CAB-SS-V35FC (DCE Female to Smart Serial)	\$87.50	CPUMedics	Refurbished unit with 30-day warranty.

Notes:

- Quantity: 8 units of the 2-Port Serial WAN Interface Card are required.
- Cable Requirements: Each interface card will require a V.35 cable.
- Compatibility: Ensure that the selected cables are compatible with the specific model of the interface card.

(v) Professors' office Workstations.

Table 2.03.12 Professors' office Workstations.

Vendor	Model	Processor	RAM	Storage	Virtualization Support	Price (USD)	Link
Lenovo	ThinkStation P3 Ultra	Intel Core i9	64 GB	2 TB SSD	Yes	\$1,999.95	ThinkEDU
Swing Computers	None PB-SMA9N57T-01	AMD Ryzen 9	64 GB	2 TB SSD	Yes	\$3,019.99	Swing Computers

Table 2.03.13 Professors' office Workstations. etc.

Vendor	Model	Price (USD)	Link
UPERFECT	22" Touch Portable Monitor	\$389.99	UPERFECT
Vendor	Model	Price (USD)	Link
Crucial	T705 2TB PCIe Gen5 SSD	\$294.99	Amazon
Vendor	Model	Price (USD)	Link
NVIDIA	RTX 4000 SFF	Varies	NVIDIA
Vendor	Model	Price (USD)	Link
The Faraday Bag	Large Faraday Bag	\$23.99	The Faraday Bag

(vi) Student Workstations

Table 2.03.14 Student Workstations

Vendor	Model	Processor	RAM	Storage	Virtualization Support	GPU (Optional)	Price (USD)	Link
CPU Solutions	ValueCore Home Office Workstation	Intel Core i7-14700F	32 GB	1 TB SSD	Yes	None	\$994.39	CPU Solutions
Adorama	HP OMEN 45L GT22-2050 Gaming Desktop	Intel Core i7-14700K	16 GB	1 TB SSD	Yes	NVIDIA RTX 4070 SUPER 12GB	\$2,149.00	Adorama
Adorama	CLX SET VR-Ready Liquid Cooled Gaming Desktop	Intel Core i9-13900KF	64 GB	2 TB SSD + 6 TB HDD	Yes	NVIDIA RTX 4070 12GB	\$2,589.99	Adorama
Vendor	Model						Price (USD)	Link
Amazon	KOORUI 22 Inch Computer Monitor						\$109.99	Amazon
eBay	LG Flatron 22-inch Class Slim IPS LED						\$79.99	eBay

Notes:

- Quantity: Assuming 30 student workstations, the total cost for desktops is approximately:
 - \$29,831.70 for the Value Core Home Office Workstation model.
 - \$64,470.00 for the HP OMEN 45L GT22-2050 Gaming Desktop model.
 - \$77,699.70 for the CLX SET VR-Ready Liquid Cooled Gaming Desktop model.

(vii) Raspberry Pi Cluster for classroom Labs

Table 2.03.15 Raspberry Pi Cluster for classroom Labs

Vendor	Model	Quantity	Price per Unit (USD)	Total Price (USD)	Link
Amazon	Raspberry Pi 3 B+	5	\$45.00	\$225.00	Amazon
SparkFun	Raspberry Pi PoE+ HAT	5	\$20.00	\$100.00	SparkFun
Raspberry Pi	PoE+ HAT	5	\$20.00	\$100.00	Raspberry Pi
SparkFun	Raspberry Pi SSD - 512GB	5	\$45.00	\$225.00	SparkFun
Raspberry Pi	Raspberry Pi SSD - 512GB	5	\$45.00	\$225.00	Raspberry Pi
Amazon	8-Port Gigabit Switch	1	\$30.00	\$30.00	Amazon
Category			Total Price (USD)		
Raspberry Pi Units			\$225.00		
PoE+ HATs			\$100.00		
SSDs			\$225.00		
Networking Equipment			\$30.00		
Total			\$580.00		

Notes:

- Quantity Assumption: The table assumes a 5-node Raspberry Pi 3 Model B+ cluster setup.
- Customization: The listed models can be customized further based on specific requirements.
- Availability: Prices and availability are subject to change; it's advisable to contact vendors directly for the most current pricing and to inquire about any additional costs such as shipping, taxes, or licensing fees.

(viii) Virtualization Infrastructure installed within the server unit

Table 2.03.16 Virtualization Infrastructure

Vendor	Product	Edition/Plan	Price (USD)	Link
VMware	vSphere Standard	Per CPU	\$995/year	VMware vSphere
Microsoft	Windows Server 2025	Standard Edition	\$1,176	Microsoft Windows Server
Proxmox	Proxmox VE	Standard Subscription	€530/year	Proxmox VE Pricing
Oracle	VirtualBox	Commercial License	\$50/user/year	Oracle VirtualBox
Vendor	Product	Plan	Price (USD)	Link
Docker	Docker Personal	Free	\$0	Docker Pricing
	Docker Pro	Annual Subscription	\$9/user/month	Docker Pro
	Docker Team	Annual Subscription	\$15/user/month	Docker Team
	Docker Business	Contact Sales	Custom	Docker Business
Kubernetes	Amazon EKS	Per Cluster	\$0.10/hour	Amazon EKS Pricing

Notes:

- VMware vSphere Standard: Suitable for businesses requiring basic virtualization with some advanced features.
- Microsoft Windows Server 2025 Standard Edition: Ideal for physical or minimally virtualized environments.
- Proxmox VE: An open-source virtualization platform with optional paid support.
- Oracle VirtualBox: A free and open-source hypervisor for x86 hardware.
- Docker Personal: Free for individual developers.
- Docker Pro: Designed for professional developers.
- Docker Team: For small development teams.
- Docker Business: For large organizations requiring advanced features.
- Amazon EKS: A managed Kubernetes service that simplifies running Kubernetes on AWS

(ix) Other Equipment

Table 2.03.17 Other Equipment

Item	Vendor	Model/Description	Quantity	Unit Price (USD)	Total Price (USD)	Link
Arduino Student Kit	Arduino	AKX00025	1	\$76.20	\$76.20	Amazon
Docker Server	Custom Build	Server with Docker pre-installed	1	\$1,200.00	\$1,200.00	Example Vendor
Cisco ISR 4331 Router	eBay	ISR4331 Integrated Services Router (Pre-owned)	1	\$66.93	\$66.93	eBay
MikroTik CCR1009-7G-1C-1S+ Router	ICD Group	CCR1009-7G-1C-1S+ High Performance Cloud Core Router with 9-Core CPU	1	\$525.00	\$525.00	ICD Group
2TB External USB SSD Drive	SanDisk	Professional Portable SSD (Thunderbolt 3, 2TB)	1	\$238.00	\$238.00	SFGate
USB Flash Drives for Students	Lexar	JumpDrive D400 USB 3.2 Gen 1 USB-C / USB-A (512GB)	10	\$53.99	\$539.90	B&H Photo
Total Estimated Cost		\$2,585.03				

Notes:

- Arduino Student Kit: The AKX00025 kit is designed for educational purposes, providing a comprehensive introduction to Arduino programming and electronics.
- Docker Server: A custom-built server pre-installed with Docker ensures a consistent and isolated environment for containerized applications.
- Cisco ISR 4331 Router: A versatile router suitable for routing and firewall configurations, available at a competitive price point on [eBay](#).
- MikroTik CCR1009-7G-1C-1S+ Router: Offers high performance with a 9-core CPU, suitable for handling multiple network tasks simultaneously. [roc-noc.com](#)
- 2TB External USB SSD Drive: The SanDisk Professional Portable SSD offers fast data transfer speeds, ideal for backing up large datasets. [sfgate.com](#)
- USB Flash Drives for Students: The Lexar JumpDrive D400 provides ample storage for students to store and transfer their work, with USB-C and USB-A compatibility.

(x) Security Tools & Software installed.

Table 2.03.18 Security Tools & Software installed.

Tool	Vendor	Edition	License Type	Price (USD)	Link
Kali Linux	Offensive Security	Community Edition	Free	\$0	Kali Linux Download
Wireshark	Wireshark Foundation	Latest Stable Version	Free	\$0	Wireshark Download
Metasploit Framework	Rapid7	Community Edition	Free	\$0	Metasploit Download
Snort	Cisco	Latest Stable Version	Free	\$0	Snort Download
Suricata	Open Information Security Foundation	Latest Stable Version	Free	\$0	Suricata Download
Nmap	Nmap Project	Latest Stable Version	Free	\$0	Nmap Download
Burp Suite	PortSwigger	Community Edition	Free	\$0	Burp Suite Download
Security Onion	Security Onion Solutions	Latest Stable Version	Free	\$0	Security Onion Download

Notes:

- Kali Linux: A Debian-based distribution designed for digital forensics and penetration testing.
- Wireshark: A network protocol analyser that captures and inspects data traveling into and out of a computer.
- Metasploit Framework: An open-source platform for developing, testing, and executing exploits against remote targets.
- Snort: An open-source intrusion detection system capable of real-time traffic analysis and packet logging.
- Suricata: An open-source threat detection engine that provides intrusion detection, intrusion prevention, and network security monitoring.
- Nmap: A network scanning tool used to discover hosts and services on a computer network.
- Burp Suite: A platform for web application security testing. The Community Edition is free and includes essential tools for manual testing.
- Security Onion: A free and open Linux distribution for intrusion detection, network security monitoring, and log management.

(xi) Classroom Lab Equipment for testing exercises.

Table 2.03.19 Classroom Lab Equipment for testing exercises.

Item	Description	Quantity	Unit Price (USD)	Total Price (USD)	Link
Hak5 Wi-Fi Pineapple Enterprise	Wireless auditing and rogue AP simulation tool	1	\$1,415.25	\$1,415.25	Virtus Fab
Hak5 LAN Turtle	Remote access over LAN	1	\$49.99	\$49.99	Hak5 Shop
Hak5 Bash Bunny Mark II	HID attacks via USB	1	\$311.00	\$311.00	FoneFunShop
Hak5 Packet Squirrel Mark II	Inline packet sniffing	1	\$119.99	\$119.99	Hak5 Shop
Hak5 Shark Jack	Ethernet-based attack automation	1	\$79.99	\$79.99	Hak5 Shop
Flipper Zero	Multi-tool for RFID, NFC, GPIO, IR, Sub-GHz testing	1	\$221.90	\$221.90	Lab401
Proxmark3 RDV4	Advanced RFID/NFC sniffing and cloning	1	\$360.00	\$360.00	Hacker Warehouse
ESP32 Marauder v7	Wi-Fi/Bluetooth scanner with packet injection	1	\$120.00	\$120.00	JustCallMeKoko LLC
OMG Cable Elite	USB keystroke injection and payload delivery	1	\$99.00	\$99.00	Hak5 Shop
HackRF One	SDR for RF fuzzing, GPS spoofing, signal analysis	1	\$413.00	\$413.00	Sapsan Sklep
Ubertooth One	BLE sniffing and MITM attack tool	1	\$63.99	\$63.99	Evalm
RTL-SDR Kit	Low-cost SDR learning tools for RF protocols	1	\$43.95	\$43.95	Nooelec
Total Estimated Cost		\$3,292.97			

Notes:

- Hak5 Wi-Fi Pineapple Enterprise: A powerful wireless auditing tool designed for penetration testing and rogue access point simulation.
- Hak5 LAN Turtle: A covert remote access tool for network penetration testing.
- Hak5 Bash Bunny Mark II: A versatile USB attack tool capable of executing HID attacks.
- Hak5 Packet Squirrel Mark II: A compact device for inline packet sniffing and network analysis.
- Hak5 Shark Jack: An Ethernet-based attack automation tool for network assessments.
- Flipper Zero: A multi-tool designed for hardware hacking, supporting RFID, NFC, GPIO, IR, and Sub-GHz frequencies.
- Proxmark3 RDV4: An advanced platform for RFID/NFC analysis, capable of sniffing, cloning, and emulation.
- ESP32 Marauder v7: A portable penetration testing tool for Wi-Fi and Bluetooth analysis.
- OMG Cable Elite: A USB cable capable of keystroke injection and payload delivery.
- HackRF One: A software-defined radio for RF fuzzing, GPS spoofing, and signal analysis. nooelec.com
- Ubertooth One: A Bluetooth development platform for sniffing and MITM attacks.
- RTL-SDR Kit: A low-cost software-defined radio kit for learning and experimenting with RF protocols.

(xii) Simulation & Toolkit Lab Equipment

Table 2.03.20 Simulation & Toolkit Lab Equipment

Tool	Description	Edition	License Type	Price (USD)	Link
GNS3	Network simulation software for designing complex network topologies.	Community Edition	Free	\$0	GNS3 Download
EVE-NG	Network emulator for building virtual network labs.	Community Edition	Free	\$0	EVE-NG Download
Cisco Packet Tracer	Network simulation tool for Cisco devices.	Latest Version	Free	\$0	Packet Tracer Download
Kali Linux	Debian-based distribution for penetration testing and security auditing.	Latest Version	Free	\$0	Kali Linux Download
Metasploit Framework	Open-source platform for developing, testing, and executing exploits.	Community Edition	Free	\$0	Metasploit Download
Burp Suite Pro	Integrated platform for web application security testing.	Professional	Paid	\$399/year	Burp Suite Pro
Nessus Professional	Vulnerability scanner for identifying and fixing vulnerabilities.	Professional	Paid	\$3,390/year	Nessus Professional
SolarWinds Engineer's Toolset	Collection of network management tools.	Latest Version	Paid	\$1,585 (one-time)	SolarWinds Toolset
Splunk Enterprise	Platform for searching, monitoring, and analyzing machine-generated big data.	Enterprise	Paid	\$1,800/year (for 1GB/day data)	Splunk Enterprise
ELK Stack	Collection of open-source tools for searching, analyzing, and visualizing log data.	Latest Version	Free	\$0	ELK Stack Download
Security Onion	Linux distribution for intrusion detection, network security monitoring, and log management.	Latest Version	Free	\$0	Security Onion Download
Autopsy	Digital forensics platform for analyzing hard drives and smartphones.	Latest Version	Free	\$0	Autopsy Download
Cuckoo Sandbox	Open-source automated malware analysis system.	Latest Version	Free	\$0	Cuckoo Sandbox
REMnux	Linux toolkit for reverse-engineering and analyzing malicious software.	Latest Version	Free	\$0	REMnux Download
Total Estimated Cost				\$6,174/year	

Notes:

- GNS3, EVE-NG, Cisco Packet Tracer: These are free network simulation tools suitable for designing and testing network topologies.
- Kali Linux, Metasploit Framework: Free tools for penetration testing and security auditing.
- Burp Suite Pro: A professional tool for web application security testing, priced at \$399 per year.comparitech.com+1netadmintools.com+1
- Nessus Professional: A vulnerability scanner priced at \$3,390 per year.g2.com+1g2.com+1
- SolarWinds Engineer's Toolset: A collection of network management tools with a one-time cost of \$1,585.
- Splunk Enterprise: A platform for analysing machine-generated data, starting at \$1,800 per year for 1GB/day data ingestion.uptrace.dev
- ELK Stack, Security Onion, Autopsy, Cuckoo Sandbox, REMnux: These are free open-source tools for log analysis, intrusion detection, digital forensics, malware analysis, and reverse engineering.

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(xiii) Simulators and Virtual Labs and Faraday Cage Lab

Table 2.03.21 Simulators and Virtual Labs and Faraday Cage Lab

Item	Description	Quantity	Unit Price (USD)	Total Price (USD)	Vendor Link
Cisco Packet Tracer	Network simulation tool for designing and testing network configurations.	1	Free	\$0	Cisco Networking Academy
GNS3	Network emulator for building complex network topologies.	1	Free	\$0	GNS3
EVE-NG	Network emulator for designing and testing network configurations.	1	Free	\$0	EVE-NG
U.S. Cyber Range (Teach Cyber Plan)	Cyber range platform for real-time penetration testing and defence exercises.	1	\$15/user/month	\$180/year	U.S. Cyber Range Pricing
Faraday Paint (per gallon)	Conductive paint for creating Faraday cages.	5 gallons	\$100	\$500	Faraday Cage Paint
Copper Mesh Sheets (per sheet)	Conductive mesh for constructing Faraday cages.	10 sheets	\$20	\$200	Copper Mesh Sheets
Faraday Tent	Portable Faraday cage for mobile secure testing areas.	1	\$1,000	\$1,000	Faraday Tent
AI Sandbox Platform	Platform for testing AI models in a secure environment.	1	\$500	\$500	AI Sandbox
3D Filament Printer	3D printer for creating prototypes and models.	1	\$300	\$300	3D Filament Printer
3D Resin Printer	3D printer for high-resolution printing of small parts.	1	\$200	\$200	3D Resin Printer
CNC Desktop Milling Unit	Computer numerical control milling machine for precise machining.	1	\$1,500	\$1,500	CNC Desktop Milling Unit
Total Estimated Cost		\$4,680/year			

Notes:

- Cisco Packet Tracer, GNS3, EVE-NG: These are free network simulation tools suitable for designing and testing network configurations.
- U.S. Cyber Range (Teach Cyber Plan): A cyber range platform offering real-time penetration testing and defence exercises at \$15 per user per month.
- Faraday Paint and Copper Mesh Sheets: Materials used to construct Faraday cages for secure testing environments.
- Faraday Tent: A portable Faraday cage for mobile secure testing areas.
- AI Sandbox Platform: A platform for testing AI models in a secure environment.
- 3D Filament Printer and 3D Resin Printer: Printers used for creating prototypes and models, with resin printers offering higher resolution for small parts.
- CNC Desktop Milling Unit: A computer numerical control milling machine for precise machining of parts.

(xiv) Security Appliances

Table 2.03.22 Security Appliances

Device	Description	Model	Estimated Price (USD)	Vendor Link
Cisco Firepower 1010	Next-Generation Firewall with ASA Software, 8 Gigabit Ethernet Ports, Up to 2 Gbps Throughput	FPR1010-ASA-K9	\$721.77 (Special Price)	4tekgear
Palo Alto Networks PA-220	Enterprise Firewall, compact form factor, suitable for small to medium-sized networks	PA-220	\$250.00 (Base Price)	PaloGuard
Splunk Enterprise	Analytics-driven SIEM for monitoring, detecting, and responding to complex threats	N/A	\$1,800/year (1GB/day)	Splunk Pricing
ELK Stack	Open-source log aggregation and analysis platform (Elasticsearch, Logstash, Kibana)	N/A	Free	Elastic.co
Total Estimated Cost	Cisco Firepower 1010		\$721.77	
	Palo Alto Networks PA-220		\$250.00	
	Splunk Enterprise		\$1,800.00	
	ELK Stack		Free	

Notes:

- Cisco Firepower 1010: Offers advanced threat protection and is suitable for small to medium-sized networks.
- Palo Alto Networks PA-220: Provides enterprise-level security in a compact form factor, ideal for small deployments.
- Splunk Enterprise: A comprehensive SIEM solution for large-scale deployments, with pricing based on data ingestion volume. [esecurityplanet.com+1uptrace.dev+1](#)
- ELK Stack: A free, open-source alternative for log aggregation and analysis, suitable for organizations with the capability to manage and scale the infrastructure.

(xv) Storage Infrastructure Solutions

Table 2.03.23 Storage Infrastructure Solutions

Item	Description	Quantity	Unit Price (USD)	Total Price (USD)	Vendor Link
Synology DiskStation DS920+	NAS storage solution with 4 bays, suitable for small to medium-sized businesses.	1	\$1,509.00	\$1,509.00	Amazon
NetApp AFF A220	Enterprise-level All Flash Array storage solution.	1	\$25,000.00	\$25,000.00	NetApp
Amazon S3 Storage	Cloud-based object storage service.	Variable	\$0.023/GB/month	Variable	AWS S3 Pricing
Azure Blob Storage	Cloud-based object storage service.	Variable	\$0.0184/GB/month	Variable	Azure Blob Storage Pricing
External RAID Boxes	External storage solutions for classroom/laboratory use.	5	\$500.00	\$2,500.00	Newegg
Supermicro SYS-510P-WTR	Rackmount server for Docker & Kubernetes environments.	1	\$1,899.99	\$1,899.99	Newegg
Intel Xeon Silver 4314	Processor for server environments.	1	\$1,200.00	\$1,200.00	Intel
128GB DDR4 RAM	Memory for server environments.	1	\$600.00	\$600.00	Crucial
4× 2TB SSDs	Storage drives for server environments.	4	\$200.00	\$800.00	Samsung
Synology RS1221+	NAS storage solution with 8 bays, suitable for enterprise environments.	1	\$1,099.00	\$1,099.00	Amazon
8× 8TB WD Red Pro HDDs	Hard drives for NAS storage solutions.	8	\$369.99	\$2,959.92	Amazon
Total Estimated Cost			\$37,567.91		

Notes:

- Synology DiskStation DS920+: A 4-bay NAS suitable for small to medium-sized businesses, offering scalability and performance.[androidcentral.com](#)
- NetApp AFF A220: An enterprise-level All Flash Array storage solution designed for high-performance applications.
- Amazon S3 & Azure Blob Storage: Cloud-based object storage services with pricing based on storage usage.[aws.amazon.com](#)
- External RAID Boxes: External storage solutions for classroom/laboratory use, facilitating data management and backups.[synology.com](#)+[2amazon.com](#)+[2vipulvyas.medium.com](#)+[2](#)
- Supermicro SYS-510P-WTR: A rackmount server designed for Docker & Kubernetes environments, supporting virtualization and containerization.
- Intel Xeon Silver 4314 & 128GB DDR4 RAM: High-performance processor and memory suitable for server environments.[amazon.com](#)
- 4× 2TB SSDs: Storage drives providing fast data access for server environments.
- Synology RS1221+: An 8-bay NAS suitable for enterprise environments, offering high storage capacity and reliability.[amazon.com](#)+[1androidcentral.com](#)+[1](#)
- 8× 8TB WD Red Pro HDDs: Hard drives designed for NAS storage solutions, providing high capacity and reliability.

(xvi) Monitoring and Logging Software Tools

Table 2.03.24 Monitoring and Logging Software Tools

Tool	Description	Edition	Estimated Price (USD)	Vendor Link
Wireshark	Open-source network protocol analyser for capturing and analysing network traffic.	Free	\$0.00	Wireshark Official
Tcpdump	Command-line network packet analyser; a powerful tool for network diagnostics.	Free	\$0.00	Tcpdump Official
Nagios Core	Open-source network monitoring software for monitoring systems, applications, and services.	Free	\$0.00	Nagios Core
Nagios XI	Commercial version of Nagios Core with advanced features and support.	Standard (100 Node)	\$2,495/year	Nagios XI Pricing
Zabbix	Open-source monitoring software for networks and applications.	Free	\$0.00	Zabbix Official
Graylog	Open-source log management platform for collecting, indexing, and analysing log data.	Open Edition	\$0.00	Graylog Official
Graylog Enterprise	Enterprise version with additional features and support.	Enterprise	\$1,250/month	Graylog Pricing
LogRhythm	Security information and event management (SIEM) platform for threat detection and response.	Contact Sales	Custom Pricing	LogRhythm Pricing
Total Estimated Cost	Wireshark	\$0.00		
	Tcpdump	\$0.00		
	Nagios Core	\$0.00		
	Nagios XI	\$2,495/year		
	Zabbix	\$0.00		
	Graylog Open Edition	\$0.00		
	Graylog Enterprise	\$1,250/month × 12 = \$15,000/yea		
	LogRhythm	Custom Pricing		
Grand Total (per year)		\$17,495 + LogRhythm Custom Pricing		

Notes:

- Wireshark & Tcpdump: Both are free, open-source tools widely used for network traffic analysis and diagnostics.
- Nagios Core: An open-source monitoring solution suitable for small to medium-sized environments.
- Nagios XI: A commercial version of Nagios Core offering enhanced features and support, priced at \$2,495/year for up to 100 nodes.nagios.com+1nagios.com+1
- Zabbix: An open-source monitoring platform known for its scalability and flexibility.
- Graylog: Offers both open-source and enterprise editions. The open edition is free, while the enterprise edition starts at \$1,250/month, totalling \$15,000/year.
- LogRhythm: A comprehensive SIEM solution with custom pricing based on organizational needs.

(xvii) Lab Management & Automation.

Table 2.03.25 Lab Management & Automation.

Vendor	Product	Plan	Cost (USD)	Description	Link
NDG	NETLAB+ Virtual Edition	16 Active Pods	\$9,995	Includes software and first-year maintenance/support	NDG NETLAB+ Pricing
NDG	NETLAB+ Virtual Edition	32 Active Pods	\$19,990	Includes software and first-year maintenance/support	NDG NETLAB+ Pricing
NDG	NETLAB+ Virtual Edition	48 Active Pods	\$29,985	Includes software and first-year maintenance/support	NDG NETLAB+ Pricing
NDG	NETLAB+ Virtual Edition	64 Active Pods	\$39,980	Includes software and first-year maintenance/support	NDG NETLAB+ Pricing
NDG	NETLAB+ Maintenance Plan	16 Active Pods (1 Year)	\$1,995	Includes 5 hours/year of email support	NDG NETLAB+ Pricing
NDG	NETLAB+ Maintenance Plan	32 Active Pods (1 Year)	\$2,995	Includes 10 hours/year of email support	NDG NETLAB+ Pricing
NDG	NETLAB+ Maintenance Plan	48 Active Pods (1 Year)	\$4,495	Includes 10 hours/year of email support	NDG NETLAB+ Pricing
NDG	NETLAB+ Maintenance Plan	64 Active Pods (1 Year)	\$5,995	Includes 10 hours/year of email support	NDG NETLAB+ Pricing
NDG	NETLAB+ Enhanced Support & Training	Up to 10 hours	\$995	Scheduled support within a 90-day window	NDG NETLAB+ Pricing
NDG	NETLAB+ On-Site Technician	3 days	\$9,995 + Expenses	On-site installation and setup	NDG NETLAB+ Pricing
U.S. Cyber Range	Teach Cyber Flat Rate Plan	Per User/Month	\$15	Includes license and AWS usage	U.S. Cyber Range Pricing
U.S. Cyber Range	Teach Cyber Economy Flat Rate Plan	Per User/Month	\$9	Includes license and AWS usage	U.S. Cyber Range Pricing
U.S. Cyber Range	Basic Flat Rate Plan	Per User/Month	\$15	Includes license and AWS usage	U.S. Cyber Range Pricing
U.S. Cyber Range	Pro Flat Rate Plan	Per User/Month	\$20	Includes license and AWS usage	U.S. Cyber Range Pricing
GitHub	GitHub Free	Per User/Month	\$0	Unlimited public/private repositories	GitHub Pricing
GitHub	GitHub Team	Per User/Month	\$4	Advanced collaboration and support for teams	GitHub Pricing
GitHub	GitHub Enterprise	Per User/Month	\$21	Security, compliance, and flexible deployment	GitHub Pricing
GitLab	GitLab Free	Per User/Month	\$0	Unlimited public/private repositories	GitLab Pricing
GitLab	GitLab Premium	Per User/Month	\$29	Advanced collaboration and support for teams	GitLab Pricing
GitLab	GitLab Ultimate	Per User/Month	Contact Sales	Security, compliance, and flexible deployment	GitLab Pricing

Notes:

- NETLAB+ Virtual Edition pricing is based on blocks of 16 active pods, with options up to 64 active pods. Maintenance plans are annual and vary based on the number of active pods. Enhanced Support & Training and On-Site Technician services are available for additional fees.[netdevgroup.com](https://www.netdevgroup.com)
- U.S. Cyber Range offers various flat rate plans based on user access and environment type, with pricing ranging from \$9 to \$20 per user per month.[uscyberrange.org](https://www.uscyberrange.org)
- GitHub and GitLab provide tiered subscription plans, with GitHub offering Free, Team, and Enterprise plans, and GitLab offering Free, Premium, and Ultimate plans.

(xviii) Internet limited Access & Loop Security

Table 2.03.26 Internet limited Access & Loop Security

Vendor	Product	Plan	Cost (USD)	Description	Link
Cisco	ASA 5506-X	Refurbished	\$539.99	8-port firewall with FirePOWER services	CDW
Cisco	ASA 5506-X	New	\$1,695.00	8-port firewall with FirePOWER services and Security Plus license	GNTME
Fortinet	FortiGate 60F	Hardware Only	\$574.77	10-port firewall with 1-year FortiCare and FortiGuard UTP	OPSEC21
Fortinet	FortiGate 60F	Hardware + 1 Year Support	\$915.66	10-port firewall with 1-year FortiCare and FortiGuard UTP	Firewalls.com
Ubiquiti	Edge Router 4	Standard	\$199.00	3-port Gigabit router with SFP port	Ubiquiti Store

Notes:

- Cisco ASA 5506-X: Offers robust security features suitable for small to medium-sized networks. The refurbished model provides a cost-effective option without compromising on performance.
- FortiGate 60F: Known for its advanced threat protection capabilities, making it ideal for environments requiring high security. The hardware-only option allows flexibility in selecting support plans.
- Ubiquiti EdgeRouter 4: A budget-friendly solution for routing needs, suitable for smaller setups or as a secondary device in larger networks.

(xix) Network and cybersecurity Testing Equipment

Table 2.03.27 Network and cybersecurity Testing Equipment

Vendor	Product	Kit	Price (USD)	Description	Link
Fluke Networks	LinkIQ Cable+Network Tester	LIQ-KIT	\$3,278.99	Advanced tester for cable and network diagnostics	CDW
Fluke Networks	CableIQ Qualification Tester	CIQ-KIT	\$2,274.00	Entry-level tester for cable qualification	Fiber Optics 4 Sale
Fluke Networks	LinkRunner AT Network Auto-Tester	LRAT-2000	\$2,470.00	Portable tester for quick network connectivity checks	Fiber in the Box
Fluke Networks	MicroScanner2 Cable Verifier Kit	MS2-KIT	\$1,477.99	Basic tool for cable verification and PoE testing	Transcat
Fluke Networks	FiberInspector FI-500 Micro	FTK1375	\$6,198.99	Fiber inspection scope with multimode light source	CDW
Ubiquiti	EdgeRouter 4	ER-4	\$199.00	Cost-effective routing solution for small networks	Ubiquiti Store

Notes:

- Fluke Networks LinkIQ Cable+Network Tester (LIQ-KIT): Ideal for comprehensive diagnostics, including cable testing, network performance, and Power over Ethernet (PoE) analysis.
- Fluke Networks CableIQ Qualification Tester (CIQ-KIT): Suitable for basic cable qualification tasks, ensuring that cables meet performance standards.[transcat.com](#)
- Fluke Networks Link Runner AT Network Auto-Tester (LRAT-2000): A portable solution for quickly diagnosing network connectivity issues, especially useful in classroom environments.
- Fluke Networks MicroScanner2 Cable Verifier Kit (MS2-KIT): Provides essential tools for verifying cable integrity and testing PoE functionality.
- Fluke Networks Fiber Inspector FI-500 Micro (FTK1375): Designed for inspecting fiber optic cables, this tool includes a light source and inspection scope for thorough analysis.[flukenetworks.com](#)+6cdw.com+6cdw.com+6
- Ubiquiti EdgeRouter 4 (ER-4): A budget-friendly router offering reliable performance for small to medium-sized networks.

(xx) Cloud Platforms

Table 2.03.28 Cloud Platforms

Vendor	Program	Offerings	Cost (USD)	Description	Link
Amazon Web Services (AWS)	AWS Educate	Free access to cloud resources, self-paced training, hands-on labs	\$0	Provides students with free access to AWS resources and training materials to learn cloud computing skills.	AWS Educate
Microsoft Azure	Azure for Students	\$100 in Azure credits, access to free services	\$0	Offers students \$100 in Azure credits annually, along with access to select free services for learning and experimentation.	Azure for Students
Google Cloud Platform (GCP)	Google Cloud for Students	200 free credits, access to labs and skill badges	\$0	Provides students with \$200 in free credits to use on GCP services, along with access to learning resources and skill badges.	Google Cloud for Students

Notes:

- AWS Educate: Offers a comprehensive platform with free access to AWS resources and training materials, allowing students to learn cloud computing skills at their own pace.
- Azure for Students: Provides students with \$100 in Azure credits annually, enabling them to explore and experiment with Azure services without incurring costs.
- Google Cloud for Students: Equips students with \$200 in free credits to use on GCP services, along with access to labs and skill badges to enhance their learning experience.cloud.google.com

These programs are designed to help students understand the pros and cons of cloud-based infrastructure and security practices through hands-on experience and learning resources.

(xxi) Threat Actors Equipment

Table 2.03.29 Threat Actors Equipment

Category	Product	Specs / Features	Price (USD)	Link
Laptop	Dell XPS 15 (2025 Edition)	Intel Core i7-13700H, 16GB RAM, 1TB SSD, NVIDIA GeForce RTX 4050, 15.6" 3.5K OLED Touch Display	\$1,799	Dell
	Lenovo ThinkPad X1 Carbon Gen 11	Intel Core i7-1365U, 16GB RAM, 1TB SSD, 14" WQHD+ Display, Linux pre-installed	\$1,699	Lenovo
	ASUS ROG Zephyrus G14	AMD Ryzen 9, 16GB RAM, 1TB SSD, NVIDIA GeForce RTX 4060, 14" QHD Display	\$1,499	ASUS
Faraday Bag	Mission Darkness Non-Window Faraday Bag for Laptops	Blocks WiFi, Bluetooth, GPS, RFID; 100% fireproof, 98% waterproof	\$90	MOSEquipment
	GoDark Faraday Sleeve for Laptops	Blocks signals; lightweight and portable	\$77	GoDark
	The Faraday Bag – Ultimate Digital Security	99.99% EMF & signal blocking; fireproof up to 4200°F; waterproof and explosion containment	\$129	The Faraday Bag
Hacking Tools	Kali Linux USB Boot Drive	Pre-installed with Kali Linux for penetration testing and ethical hacking	\$25	Kali.org
	Wireshark Network Analyzer USB Drive	Portable version of Wireshark for network traffic analysis	\$30	Wireshark
	Raspberry Pi 4 Model B (4GB) + Accessories	Ideal for setting up honeypots or simulating IoT devices	\$100	Raspberry Pi

Notes:

- Laptops: The selected laptops are equipped with specifications suitable for running multiple virtual machines, penetration testing tools, and network analysis applications. They also support dual-booting with Linux, essential for cybersecurity tasks.[onlinetoolguides.com](#)
- Faraday Bags: These bags are crucial for isolating devices from external signals during demonstrations or tests, ensuring that devices cannot communicate with external networks or be remotely accessed.
- Hacking Tools: The listed tools are essential for practical exercises in ethical hacking, allowing students to analyse network traffic, perform penetration tests, and simulate attacks in a controlled environment.

(xxii) Cybersecurity Additional syllabus Modules.

1) Biometric Security Lab Equipment

Table 2.03.30 Biometric Security Lab Equipment

Vendor	Product	Specs / Features	Price (USD)	Link
Iris ID	iCAM7000 Iris Recognition System	High-resolution iris scanner, dual iris capture, integrated 5MP face camera, Ethernet connectivity	\$2,463.00	GoKeyless
Intel	RealSense D455 Depth Camera	1080p30 RGB sensor with global shutter, 95mm sensor distance, IMU for depth awareness, USB-C connectivity	\$419.00	Intel Store
Luxand	FaceSDK	Facial feature detection, emotion recognition, age and gender estimation, SDK for integration	Contact for pricing	Luxand
OpenCV	OpenCV Library	Open-source computer vision and machine learning software library, supports real-time image processing	Free	OpenCV
Dlib	Dlib Library	Toolkit for machine learning and computer vision, includes facial landmark detection and face recognition	Free	Dlib
DeepFace	DeepFace Library	Python library for deep learning-based face recognition, supports multiple backends like VGG-Face, Google FaceNet	Free	DeepFace GitHub

Notes:

- iCAM7000 Iris Recognition System: This device offers high-resolution iris scanning capabilities, dual iris capture, and an integrated 5MP face camera, making it suitable for advanced biometric security applications.
- RealSense D455 Depth Camera: Equipped with a 1080p30 RGB sensor and an inertial measurement unit (IMU), this camera provides accurate depth sensing, ideal for 3D scanning and facial recognition tasks.
tasks.bhphotovideo.com+1bhphotovideo.com+1
- Lux and FaceSDK: A comprehensive SDK offering facial feature detection, emotion recognition, and age/gender estimation, facilitating the development of biometric applications.
- OpenCV Library: An open-source library that supports real-time image processing, widely used in computer vision tasks, including facial recognition.
- Dlib Library: Provides tools for machine learning and computer vision, including facial landmark detection and face recognition functionalities.
- DeepFace Library: A Python library that simplifies deep learning-based face recognition, supporting multiple backends for enhanced accuracy.

2) 3D Printing & Custom Hardware Lab Equipment

Table 2.03.31 3D Printing & Custom Hardware Lab Equipment

Category	Product	Specs / Features	Price (USD)	Link
3D Printers	Creality Ender-3 S1 Pro	FDM, 300°C nozzle, auto-leveling, silent motherboard, 32-bit board, 4.3" touchscreen, supports PLA, ABS, TPU, PETG	\$619.90 – \$741.00	Creality Ender-3 S1 Pro
	Elegoo Mars 4 Ultra	MSLA, 9K mono LCD, 7" display, 8520x4320 resolution, Linux OS, 4G RAM	\$189.99 – \$209.99	Elegoo Mars 4 Ultra
	Revopoint POP 2 3D Scanner	3D scanner, captures shapes into digital 3D models, ideal for replication	\$447.99	Revopoint POP 2
Software	Autodesk Fusion 360	CAD, CAM, CAE, PCB, cloud-based, integrates design and manufacturing workflows	\$545/year	Autodesk Fusion 360
	CHITUBOX Pro	3D printing slicer software, supports multiple CAD file formats, advanced features	\$169/year	CHITUBOX Pro
	PrusaSlicer	Free, open-source slicer, supports FDM and resin printers, developed by Prusa Research	Free	PrusaSlicer
	Meshmixer	Free, 3D modelling and mesh editing software, useful for preparing models for printing	Free	Meshmixer

Notes:

- 3D Printers: The selected printers support a range of materials suitable for creating custom hardware components, including tamper-resistant enclosures and drone frame replicas.
- 3D Scanner: The Revopoint POP 2 is ideal for capturing detailed 3D models of devices, which can be used for replication and forensic analysis.
- Software: Autodesk Fusion 360 offers comprehensive tools for design and manufacturing, while CHITUBOX Pro provides advanced slicing capabilities for resin printing. PrusaSlicer and Meshmixer are free alternatives that support various printing needs.

3) Drone Forensics & Signal Analysis Lab Equipment

Table 2.03.32 Drone Forensics & Signal Analysis Lab Equipment

Category	Item	Specs / Features	Price (USD)	Vendor Link
Drones (Test Units)	HoverAir X1	8K video at 30 fps, foldable design, compact size, user-friendly interface	\$499.00	HoverAir
	Parrot Anafi USA	32x zoom, thermal imaging, 4K HDR camera, NDAA & TAA compliant	\$7,000.00	Drone Nerds
	DJI Mini 4 Pro	4K HDR video, omnidirectional sensing, under 249g, Fly More Combo included	\$1,217.56	BuyDirectNY
Signal Analysis Tools	HackRF One + PortaPack H4M	Software Defined Radio, signal spoofing, telemetry interception, GPS spoofing	\$506.82	Lab401
	GNURadio Workshop (2019)	Educational resource for GNURadio, microwave and ham radio applications	\$26.00	BooksWholesale
Forensic & Recovery Tools	DJI Assistant 2 (for Mavic series)	Firmware analysis, internal data recovery, telemetry log extraction	Free	DJI Official
	Faraday Drone Cage	RF isolation, secure testing environment, prevents external signal interference	\$150.00 (estimate)	Amazon
Flight Simulation & Training	DJI Flight Simulator Enterprise	Realistic flight training, supports various DJI drone models, advanced flight physics	\$1,440.00	Eagleview Drones

Notes:

- Drones (Test Units): The selected drones offer a range of features suitable for forensic analysis, including high-resolution cameras, thermal imaging, and compact designs for ease of use in various environments.
- Signal Analysis Tools: The HackRF One with PortaPack H4M provides capabilities for signal interception and spoofing, essential for understanding UAV communication vulnerabilities. GNURadio Workshop offers educational resources to support the use of GNURadio in signal analysis.
- Forensic & Recovery Tools: DJI Assistant 2 is a crucial tool for accessing and analysing DJI drone firmware and telemetry data. A Faraday Drone Cage ensures a secure environment for testing and recovering data without external interference.
- Flight Simulation & Training: The DJI Flight Simulator Enterprise offers realistic training scenarios, allowing students to practice drone operations and recovery techniques in a controlled virtual environment.

4) Mobile Device Security & Forensics Lab Equipment.

Table 2.03.33 Mobile Device Security & Forensics Lab Equipment.

Category	Item	Specs / Features	Price (USD)	Vendor Link
Test Devices	6× Android Phones (rooted Pixel 6a)	Rooted for forensic analysis, supports various Android versions	\$1,200	Google Store
	4× iPhones (iOS SE – supervised mode)	Supervised mode for device management and app testing	\$1,600	Apple Store
	2× Android Tablets (Samsung A7)	Android tablets for app testing and data extraction	\$400	Samsung Store
	2× iPads (managed profile)	Managed profiles for iOS app testing and data recovery	\$1,000	Apple Store
Forensic Tools	Cellebrite UFED 4PC	Logical and physical extractions, supports a wide range of devices	\$9,000	Cellebrite
	Magnet AXIOM Mobile	Mobile forensic suite with app-level analysis, supports various mobile platforms	\$1,200/year	Magnet Forensics
	Oxygen Forensic Detective	Cloud, backup, SIM, and app investigation, supports a wide range of devices	\$4,000	Oxygen Forensics
	MobSF	Static and dynamic mobile application analysis	Free	MobSF GitHub
	Frida & Objection	Live instrumentation and app bypass tools	Free	Frida / Objection
	ADB/Fastboot	Device prep, bypass, backup tools for Android devices	Free	Android Developers
	iMazing	iOS device management and data extraction tool	\$39.99	iMazing
	Apple Configurator	iOS device management tool for supervised mode	Free	Apple Configurator
	Burp Suite Pro	App API interception via proxy, web vulnerability scanning	\$449/year	PortSwigger

Notes:

- **Test Devices:** The selected devices offer a range of features suitable for forensic analysis and mobile app security training.
- **Forensic Tools:** The listed tools provide comprehensive capabilities for mobile device forensics, including data extraction, app analysis, and device management.
- **Software Tools:** The free tools (MobSF, Frida & Objection, ADB/Fastboot, Apple Configurator) are open-source and widely used in the cybersecurity community for mobile application analysis and device management.

5) Crisis Response Simulation SOC Classroom.

Table 2.03.34 Crisis Response Simulation SOC Classroom.

Category	Item	Description	Estimated Cost (USD)	Vendor Link
Simulation Platforms	Conductor Crisis Simulation Platform	Realistic crisis scenarios with social media dynamics, help desk emulation, and sentiment analysis	\$20,000–\$350,000/unit	Conducttr Pricing
	Crisis Solutions Simulation Exercises	Desktop and immersive exercises with video news, simulated calls, and role-playing	\$15,000–\$30,000	Crisis Solutions
	Hack The Box Crisis Control	AI-powered tabletops for executive and cyber teams, measuring organizational crisis readiness	Not publicly listed	Hack The Box
Immersive Learning Centres	PSG Immersive Learning Centre	Turnkey solution with hardware, software, and educational content for crisis simulations	~\$70,000	PSG Learning
Training Kits & Facilitation	Spartan9 Crisis Exercise Kits	Comprehensive resources for conducting crisis exercises, including presentation decks and facilitator notes	\$250–\$975/set	Spartan9 Kits
	Resilience Edge Crisis Simulation and Response Exercises	In-house training program with immersive scenarios and real-time decision-making	\$3,000	Resilience Edge
Training Courses	BCM Institute CM-2050 Crisis Simulation Course	One-day course focusing on disaster scenario planning and business continuity management	\$750	BCM Institute
	LEIC Social Media Dynamics: A Crisis Response Simulation (Online)	Online course simulating social media crises and public relations challenges	\$275	LEIC Course

Notes:

- Simulation Platforms: These platforms offer a range of features from basic desktop exercises to fully immersive simulations, with costs varying based on complexity and customization.
- Immersive Learning Centres: Turnkey solutions that transform physical spaces into interactive training environments, suitable for various crisis scenarios.
- Training Kits & Facilitation: Provide structured resources and guidance for conducting effective crisis exercises, enhancing preparedness and response capabilities.[conducttr.com](#)+7[spartan9.com](#)+7[reds-management.com](#)+7
- Training Courses: Offer specialized knowledge and skills in crisis simulation and response, beneficial for individuals seeking to deepen their expertise.

Appendix B, Document from Cisco for equipment teaching for the CCNA exams.

Cisco Networking Academy

CCNA Lab Equipment Requirements

Version 1.0

Revised 15OCTOBER2024

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Overview

This document provides information on the specific recommended Cisco hardware and accessories available to member Cisco Networking Academies through the Cisco Networking Academy equipment

promotion incentive for delivery of Cisco CCNA curricula hands-on labs. Only the products and services specified in this document are eligible for the Cisco Networking Academy promotion incentive. Please work with the Cisco Reseller Partner of your choice to request pricing and order fulfillment through the promotion incentive. If your purchasing organization does not have a preferred Cisco Reseller Partner, please utilize the [Partner Locator](#) to identify Cisco Reseller Partners near you.

Note: Cisco reserves the right to add, modify, change, improve, suspend or discontinue any product or promotion at any time without prior notice, liability or costs.

CCNA Equipment List

The products and services listed below have been mapped to the CCNA curricula for delivery of hands-on labs.

- For CCNA, the Cisco 8200L router should be ordered with Cisco DNA Advantage On-Prem DNA License. DNA Essentials Subscription Licenses are required for the C9200 switch model.
- Any wireless router with WPA2 support may be chosen. No promotional incentive discount is available for the wireless router.

Additional information can be found in the [reference notes](#) section.

Recommended Minimum Equipment List			
Qty	Product Number	Description	Notes
2	C8200L-1N-4T	Cisco Catalyst 8200L with 1-NIM slot and 4x1G WAN ports router	1,2
2	DNA-P-T0-E-3Y	Cisco DNA Essentials On-Prem Lic 3Y - up to 25M (Aggr, 50M) <i>CONFIGURE THE DNA LICENSE WITH THE \$0.00 OPTION SUPPORT SW SVS-PDNA-ESS</i>	3
2	C9200L-24T-4G-E	Catalyst 9200L 24-port data, 4 x 1G, Network Essentials license	1,2,4
2	C9200L-DNA-E-24-3Y	C9200L Cisco DNA Essentials, 24-port, 3 Year Term license	6
- or -			
2	C1000-24T-4G-L (not available in Australia)	<i>Or, instead of the C9200L switch: Orderable only before the End of Sale date of April 30, 2025.</i> Catalyst 1000 24port GE, 4x1G SFP	1,2,8
1	Wireless Router	Wireless router (generic brand) with WPA3 support. Note: Wireless router is required for course #2 - Switching, Routing, and Wireless Essentials (SRWE)	

Optional/Alternate Products

The optional/alternate products below may be substituted as needed or if preferred. Optional products may be ordered if needed. Please keep in mind that Cisco devices no longer include console cables. Optional products can support labs with advanced service modules, unified communications features, or to support more complex topologies.

- Inclusion of service products is not mandatory; ONLY 8x5xNBD services are eligible for the Cisco Networking Academy promotion incentive

Optional/Alternate Products			
Alternate Switching Product (Qty as needed)			
Qty	Product Number	Description	Notes
	C1300-24T-4G	Catalyst 1300 24-port GE, 4x1G SFP	2, 5
Optional Routing Product			
	C8200-RM-19-1R	Cisco Catalyst 8200 Rack mount kit - 19" 1R	
	NIM-2T=	2-Port Serial WAN Interface card	
	CAB-SS-V35MT=	V.35 Cable, DTE Male to Smart Serial, 10 Feet	
	CAB-SS-V35FC=	V.35 Cable, DCE Female to Smart Serial, 10 Feet	
Console Cables			
	Product Number	Description	Notes
	CAB-CONSOLE-USB=	Console Cable 6ft with USB Type A and mini-USB Type B	2
	CAB-CONSOLE-USB-C=	Console cable USB-C type (compatible with C1300-24T-4G switch)	2
	CAB-CONSOLE-RJ45=	Console Cable 6ft with RJ45 and DB9F	2
Optional Service Products			
	Product Number	Description	
	CON-SNT-C8200TL1	SNTC-8X5XNBD Cisco Catalyst 8200L with 1-NIM slot and 4x1G WAN ports	
	CON-SNT-C1300G4	SNTC-8X5XNBD Catalyst 1300 24-Port GE, 4X1G SFP	
	CON-SNT-C920L24T	SNTC-8X5XNBD Catalyst 9200L 24-port data, 4 x 1G, Net	
Optional Equipment for NETLAB+			
	NIM-16A=	16-Port Async Serial NIM	7
	CAB-ASYNC-8=	Async cable Octopus Cable for Async NIM	

Additional information can be found in the [reference notes](#) section. Additional Lab Hardware and Software Required

The hardware and software below are required to access and deliver the curriculum.

Hardware		
Qty	Description	Notes
1	PC acting as an application server (MS Windows Server or Windows 10 or later)	
--	Desktop PCs acting as clients (MS Windows 10 or later) 1 per student	
--	Wireless LAN Adapters for the client PCs	
--	Ethernet cables and Serial Cables as required	

Every client PC will require installation of the software below:

Software		
Qty	Description	Notes
--	Packet Tracer v8.0 or higher	
--	Tera Term source SSH client software for lab PCs.	
--	Oracle VirtualBox, most recent version.	
--	Wireshark version 2.5 or higher.	
--	Open-source server software: For various services and protocols, such as Telnet, SSH, HTTP, DHCP, FTP, TFTP, etc.	

Reference Notes

Note	Description
1	The Networking Academy - Image & Hardware Support Document lists the tested and supported IOS images for each hardware platform that provide expected and consistent results for the lab exercises. Routers and switches always ship with the latest IOS version and it may be necessary to move them to the tested and supported IOS image. The Networking Academy Maintenance program allows instructors to download the recommended IOS image at no cost. The Image & Hardware Support Document and information on signing up for Networking Academy Maintenance can be found in the Equipment Information section of netacad.com.
2	Console cables are not included with the purchase of new network devices and they have been added in the optional equipment section. Our recommendation is to purchase one console cable with each router or switch.
3	DNA subscription is required by Cisco for Catalyst 8200L to activate the network stack on the router. Minimum term is 3 years. Subscription renewal is not mandatory. <i>CONFIGURE THE DNA LICENSE WITH THE \$0.00 OPTION SUPPORT SW SVS-PDNA-ESS.</i>
4	Network Essentials License is not related to the Networking Essentials course. 9200L switches use two possible licenses: Advantage and Essentials. We use Network Essentials License in CCNA.
5	The Catalyst 1300 switch replaces the EoL/EoS C1000-24T-4G-L switch. The USB console port uses a USB-C connector type compatible with the CAB-CONSOLE-USB-C= cable. The Catalyst 1300 Series operates on customized Linux OS software, and some CLI commands differ from a traditional IOS/IOS-XE experience. For a traditional IOS/IOS-XE CLI experience, use the C9200L-24T-4G-E switch option instead.
6	DNA subscription is required by Cisco for Catalyst 9000 series switches. Minimum term is 3 years. Subscription renewal is not mandatory.
7	NIM-16A= requires IOS-XE 16.3.1 or later.
8	The Catalyst 1000 switch is not available in Australia, Catalyst 9200L is the alternate option.



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Cisco Networking Academy
CCNP
Lab Equipment Requirements

Version 1.0

Revised 15OCT2024

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This document provides information on the specific recommended Cisco hardware and accessories available to member Cisco Networking Academies through the Cisco Networking Academy equipment promotion incentive for delivery of Cisco CCNP curriculum hands-on labs. Only the products and services specified in this document are eligible for the Cisco Networking Academy promotion incentive. Please work with the Cisco Reseller Partner of your choice to request pricing and order fulfillment through the promotion incentive. If your purchasing organization does not have a preferred Cisco Reseller Partner, please utilize the [Partner Locator](#) to identify Cisco Reseller Partners near you.

Note: Cisco reserves the right to add, modify, change, improve, suspend or discontinue any product or promotion at any time without prior notice nor liability or costs.

CCNP Equipment List

The products and services listed below have been mapped to the CCNP curricula for delivery of hands-on labs.

- For CCNP, the Cisco 8200L router should be ordered with Cisco DNA Advantage On-Prem DNA License configured with the \$0.00 option s.
- The specified DNA Subscription Licenses are required for the 9200 and 9300 switch models.

Additional information can be found in the [reference notes](#) section.

Qty	Routing Products	Description	Notes
3	C8200L-1N-4T	Cisco Catalyst 8200L with 1-NIM slot and 4x1G WAN ports	1, 2
3	DNA-P-T0-A-3Y	Cisco DNA Advantage On-Prem Lic 3Y – up to 25M (Aggr, 50M) <i>CONFIGURE THE DNA LICENSE WITH THE \$0.00 OPTION SUPPORT SW SVS-PDNA-ESS</i>	3, 5
2	NIM-2T=	2-Port Serial WAN Interface card	
2	CAB-SS-V35MT=	V.35 Cable, DTE Male to Smart Serial, 10 Feet	
2	CAB-SS-V35FC=	V.35 Cable, DCE Female to Smart Serial, 10 Feet	

Qty	Switching Products	Description	Notes
1	C9200L-24T-4G-E	Catalyst 9200L 24-port data, 4 x 1G, Network Essentials	10,11
1	C9200L-DNA-E-24-3Y	C9200L Cisco DNA Essentials, 24-port, 3 Year Term license	10
<i>- or -</i>			
1	C1000-24T-4G-L <i>(not available in Australia)</i>	<i>Or, instead of the C9200L switch: Orderable only before the End of Sale date of April 30, 2025.</i> Catalyst 1000 24port GE, 4x1G SFP	1,2,12
2	C9300L-24T-4G-A	Catalyst 9300L 24p data, Network Advantage ,4x1G Uplink	1, 2, 4, 10
2	C9300L-DNA-A-24-3Y	C9300L Cisco DNA Advantage, 24-port, 3 Year Term license	10

Note: The Cisco Catalyst 9300L comes with an IOS-XE UNIVERSAL, e.g. S9300LUK9-xxx (select a current version for xxx at setup).

Alternate Products

The alternative products below may be substituted as needed.

Additional information can be found in the [reference notes](#) section

Product	Description	Notes
Alternate Switching Products		
C1300-24T-4G	Catalyst 1300 24-Port GE, 4X1G SFP	2, 6, 9

Optional Products

Optional products may be ordered if needed. Please keep in mind that Cisco devices no longer include console cables. Optional products can support labs with advanced service modules, unified communications features, or to support more complex topologies.

- The Cisco Catalyst 9300L comes with an IOS-XE UNIVERSAL, e.g. S9300LUK9-xxx (select a current version for xxx at setup).
- DNA Subscription Licenses are required for the 9200 and 9300 switch models.
- Inclusion of service products is not mandatory; ONLY 8x5xNBD services are eligible for the Cisco Networking Academy promotion incentive.

Additional information can be found in the [reference notes](#) section.

Product	Description	Notes
Optional Routing Products		
C8200-RM-19-1R	Cisco Catalyst 8200 Rack mount kit - 19" 1R	
NIM-2T=	2-Port Serial WAN Interface card	
Optional Switching Product		
C9300L-24P-4G-A	Catalyst 9300L 24p PoE, Network Advantage ,4x1G Uplink	1, 2, 4, 7, 10
Optional Console Cables		
CAB-CONSOLE-USB=	Console Cable 6ft with USB Type A and mini-USB Type B	2
CAB-CONSOLE-USB-C=	Console cable USB-C type (compatible with C1300-24T-4G switch)	2
CAB-CONSOLE-RJ45=	Console Cable 6ft with RJ45 and DB9F	2
Optional Service Products		
CON-SNT-C1300G24	SNTC-8X5XNBD Catalyst 1300 24-port GE, 4x1G SFP	
CON-SNT-C9300LA2	SNTC-8X5XNBD Catalyst 9300L 24p data, Network Advantage, 4x1G Uplink	
CON-SNT-C93004G4	SNTC-8X5XNBD Catalyst 9300L 24p PoE, Network Advantage, 4x1G Uplink	

Product	Description	Notes
CON-SNT-C8200TL1	SNTC-8X5XNBD Cisco Catalyst 8200L with 1-NIM slot and 4x1G WAN ports	
CON-SNT-C920L24T	SNTC-8X5XNBD Catalyst 9200L 24-port data, 4 x 1G, Net	
Optional NETLAB+ Equipment		
NIM-16A=	16-Port Async Serial NIM	8
CAB-ASYNC-8=	Async cable Octopus Cable for Async NIM	

Additional Lab Hardware and Software Required

The hardware and software below are required to access and deliver the curriculum.

Hardware		
Qty	Description	Notes
1	PC acting as an application server (MS Windows Server or Windows 10 or later)	
--	Desktop PCs acting as clients (MS Windows 10 or later) 1 per student	
--	Ethernet cables and Serial Cables as required	

Every client PC will require installation of the software below:

Software		
Qty	Description	Notes
--	Packet Tracer v8.0 or higher	
--	Terminal emulation and SSH client software for lab PCs.	
--	Oracle VirtualBox, most recent version.	
--	Wireshark version, latest stable version.	
--	Open-source server software: For various services and protocols, such as HTTP, DHCP, FTP, TFTP, etc.	

Reference Notes

Note	Description
1	Networking Academy Maintenance - Image & Hardware Support Document lists the tested and supported IOS images for each hardware platform that provide expected and consistent results for the lab exercises. Routers and switches always ship with the latest IOS version, and it may be necessary to move them to the tested and supported IOS image. The Networking Academy Maintenance service allows instructors to download the recommended IOS image at no cost. The Image & Hardware Support Document and information on signing up for maintenance can be found in the Equipment Information section of Cisco Networking Academy learning platform.
2	Console cables are not included with the purchase of new network devices. Our recommendation is to purchase one console cable with each router or switch. We recommend purchasing one console cable with each router or switch.
3	DNA subscription is required by Cisco for Catalyst 8200L to activate the network stack on the . The minimum term is 3 years. Subscription renewal is not mandatory. <i>CONFIGURE THE DNA LICENSE WITH THE \$0.00 OPTION SUPPORT SW SVS-PDNA-ESS.</i>
4	The Catalyst 9300L switch replaces the EoL/EoS WS-C3650-24TS-E switch.
5	The c8200L must be configured with the SVS-PDNA-ADV Embedded Support for SW - Tiered DNA Advantage On-Prem.
6	Recommended for institutions using NETLAB+ as a control switch.
7	PoE is referenced in the curriculum book but not used or referenced in the labs.
8	NIM-16A= requires IOS-XE 16.3.1 or later.
9	The Catalyst 1300 switch replaces the EoS announced Catalyst 1000 switch. The USB console port uses a USB-C connector type compatible with the CAB-CONSOLE-USB-C= cable. The Catalyst 1300 Series operates on customized Linux OS software, and some CLI commands differ from a traditional IOS/IOS-XE experience. For a traditional IOS/IOS-XE CLI experience, use the C9200L-24T-4G-E switch option instead.
10	DNA subscription is required by Cisco for the 9200 and 9300 switches. The minimum term is 3 years. Subscription renewal is not mandatory.
11	The 9200L is an alternate IOS-based product for the 1300. It is NOT an alternate for the 9300L.
12	The Catalyst 1000 switch is not available in Australia, Catalyst 9200L is the alternate option.



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Application Number.

21

Institution.

Lake Regions State College

Applicant Name.

Dr. Doug D. Darling

Applicant Title.

President

Applicant Department.

Department of Administration/Office of the President

Project Title.

LRSC Launch of Allied Health Apprenticeships Program utilizing Mobility Modalities

Briefly describe the proposed project.

Lake Region State College proposes four new allied health programs offered by Altru Health System in Grand Forks and Devils Lake locations. These programs will be offered as apprenticeships and will meet all academic standards as well as U.S. federally approved apprenticeship standards for apprenticeship.

LRSC is requesting NDUS approval to add the following Allied Health occupations: 1) Surgical Technologist, 2) Lab Technician (Biological), 3) Respiratory Therapist, and 4) Ultrasound/Sonographer with intentions of reviewing the feasibility of a fifth apprenticeship in radiology technology. LRSC will develop these certificate/associate degrees in a collaborative partnership with a private medical system based in North Dakota. LRSC will have articulation agreements with academic programs offering 4-year degrees which will articulate with LRSC 2-year degree programs. LRSC will also seek formal agreement with Grand Forks Public Schools to develop youth apprenticeships in these four apprenticeship programs and its current nursing apprenticeship programs. Currently, LRSC offers more dual credit in North Dakota than any other college or university through distance learning modalities.

With funds requested in the WEIF application, LRSC will offer theory courses in an established modality model with the required clinicals (hands-on learning) to be offered only on the work site with the employer partner (See Attachment A: MOA between LRSC and Altru [Draft]). LRSC has had experience utilizing this model of coursework and clinical lab delivery in their Earn and Learn nursing apprenticeships program at a federally registered Apprenticeship Program Sponsor. Five years ago, LRSC collaboratively developed nursing apprenticeships with the North Dakota Board of Nursing and the U.S. Department of Labor. Our intention is to expand and replicate this educational model in other healthcare occupations.

LRSC Nursing program apprenticeships are now available via the mobility model and through original classroom delivery. The success of this distance mode of delivery for healthcare occupations had been tracked as a pilot project with quarterly reporting to the ND Board of Nursing. For the past two years, it has no longer been considered a pilot project. The LRSC apprenticeship model for nursing is nationally recognized in several professional publications, and LRSC has supported over 35 states as they designed and developed their programs.

LRSC will work directly with regulatory boards or agencies for these occupations to develop curriculum acceptable to meet the scope of practice and certification/licensing.

This model will be replicated in LRSC's new Allied Health occupations. The benefit to the student is employment when they become apprentices; pay increases during the apprenticeship term; their tuition, fees, and books paid for by the employer; and clinical mentorship on the work site. The employer benefits by securing a staff member before they complete school and an opportunity to guide their career progression. Apprenticeships have proven to successfully recruit and retain new employees and upskill and retain current employees (See Attachment B: Letters of Support).

Once the curriculum is approved through the NDUS process, LRSC will secure signed articulation agreements with several four-year universities allowing students to transfer their credits and complete their four-year degrees in their chosen fields of work. Additionally, LRSC will seek further funding with a private foundation to support this initiative pilot project and develop it further to include youth apprenticeships in Grand Forks high schools for these same occupations.

Does the proposal meet the statutory guidance of N.D.C.C. 15-10-75?

Yes

Indicate which statutory objective this proposal will advance (as required by N.D.C.C. 15-10-75).

Curriculum Development; Equipment & technology purchases; Facility modifications and equipment installation; Hiring and training new and existing instructors; Education program promotion; Enhancement of postsecondary partnerships with primary and secondary schools

Briefly describe how the funds will advance the objectives.

-Curriculum development: Funds will be used to develop curriculum and clinical outcomes for all Allied Health occupations listed and required courses already developed at LRSC, keeping in mind common courses among North Dakota colleges and universities.

-Equipment and technology purchases and installation: Funds will be used for the purchase and placement of equipment necessary for teaching these courses, specifically innovative technology including virtual reality and augmented reality. The equipment will be used in both theory courses and to supplement clinical experiences.

-Hiring and training new and existing instructors: LRSC will hire several new staff competent in the targeted occupations to fill faculty positions.

-Education program promotion: Marketing funds are requested to inform the public and primary, secondary, and post-secondary institutions of these new academic programs at LRSC. Altru Health System will be responsible for recruiting and hiring student apprentices, although some joint efforts in collaboration are expected, like how the college posts all apprenticeships on the LRSC website.

-Enhancement of post-secondary partnerships with primary and secondary schools: LRSC will secure signed articulation agreements with several four-year universities, allowing students to transfer their

credits and complete their four-year degrees in their chosen fields of work.

LRSC will seek further funding outside of WEIF funds to include youth apprenticeship program development by building curriculum and work-based learning opportunities in partnership with Grand Forks Public Schools for these same occupations (See Attachment C: Budget and Budget Justification).

When will the proposed project be ready to admit students?

Fall 2025

Amount of funding requested.

\$1,500,000

What other sources of funding or resources support the proposed project?

LRSC will provide assistance from its Earn and Learn Apprenticeship Program staff to develop and provide project management for these new apprenticeship career opportunities. LRSC will support their collaborative partner, Altru Health System, who is assisting with curriculum development, professional mentorship provided to the student apprentices, and clinical, work-based learning offered in their facilities, which includes use of both onsite classrooms and patient care and teaching equipment.

LRSC apprentices and their employer partners are encouraged to utilize funds from Career Builders and Operation Internship and other legislative approved funding sources for workforce development with apprenticeships.

Which identified workforce development need will this project address?

Guided by its overarching mission to create beneficial conditions for economic growth and opportunity for all communities, the United States Department of Commerce supports policies that expand, create, and coordinate industrial and innovation clusters to advance U.S. competitiveness in tandem with modern workforce development strategy. In short, the department sees economic development and workforce development as inextricably linked.

The U.S. Department of Commerce has a three-part approach to building sustainable, employer-driven career pathways to meet employers' need for talent and to connect Americans to good jobs: 1) Invest in employer-driven regional workforce education and training systems that lead to good jobs. 2) Foster transformative employer practices to address challenges in identifying, recruiting, and developing a diverse, skilled workforce. 3) Produce and disseminate timely, clear data and information to help Americans discover and participate in opportunities for skills development and economic advancement.

This project meets general workforce development needs as an answer to both upskilling and retaining/recruiting employees in the healthcare workforce. The project occupations to be offered by LRSC with NDUS approval and WEIF funding are all listed in 2024 in-demand occupations. Registered Apprenticeship Programs (RAPs) are considered in-demand jobs per guidance of the United States Department of Labor. For a complete listing of RAPs in North Dakota, go to: jobsnd.com/jobseeker/apprenticeship. See Attachment B: Letters of Support for more input from area workforce development entities.

What are the project's metrics for success? How will these metrics be achieved?

Goals

1. To develop strong public/private partnerships to support the recruitment and retention of Allied Health professionals utilizing apprenticeships.

2. To develop and deliver curriculum utilizing mobility (distance learning) modalities which support apprenticeships where students live and seek work (off-campus).
3. To design an apprenticeship model that can be replicated in other colleges and universities and in other occupations.

A key to developing a successful model is the inclusion of systems oversight of structure, process, and outcome measurements. LRSC has significant strength in apprenticeship program building and staff expertise utilizing a structure Continuous Quality Improvement and Case Management System for its Earn and Learn Apprenticeship Program.

Process Measurements

This initiative is required to meet three sets of standards:

1. LRSC will meet those of the U.S. Department of Labor Office of Apprenticeship which are audited by the Office of Apprenticeship for compliance.
2. LRSC academic programs go through the rigor of the Higher Learning Commission and oversight of the North Dakota University System.
3. LRSC educational programs must also adhere to structure curriculum for students to take a certification or licensing exam to be qualified to work in a specific occupation.

Outcome Measurements

Results for measuring LRSC's AHAPMM project success are identified in Addendum 1: Goals, Process Measurements, and Outcomes Metrics included in the MOA between LRSC and Altru Health System (See Attachment A: MOA between LRSC and Altru [Draft]). Objectives met and estimated project timelines are identified for each measurable benchmark. Also identified are the needs met within this proposal and a statement for a follow-up or second grant proposal to meet the intent of LRSC's overall vision of the launch of an allied health apprenticeship initiative.

How does the project support student retention in North Dakota to meet the needs of local industries?

LRSC encourages employer partners in apprenticeships to utilize scholarships offered by specific employers. The college also encourage apprentices and employers to utilize the Career Builders Program offered by NDUS. If utilized, there is a 3-year commitment to stay and work in North Dakota. Employer partners in LRSC's Earn and Learn Apprenticeship Program also have developed Employer/Employee agreements which also includes details of a letter of commitment to the employer, often specifying a specific length of time they remain employed by the employer following their apprenticeship.

How are the students supported by this project prepared to enter the workforce with minimal additional on-the-job training?

Using competence-based apprenticeships, students can be hired and earn wages, gain work-based learning skills, and become competent upon completion of their first CTE course. Once the courses are completed and passed successfully, competency is identified when a faculty member signs the document listing the skills learned in any specific course within a program of study. The employer can add those skills to the employee's ability to perform those tasks on the job immediately.

This project supports both academic certificates and 2-year degrees. In all cases, a professional test is required for certification or licensure to practice in a chosen occupation after completion of the occupation program(s).

LRSC is predicting with its employer partner cohorts of 6-8 students each year in each of the four allied

health occupations utilizing both Grand Forks and Devils Lake locations.

Are there private sector partners in creating/offering the project?

Yes. Altru Health System is the private sector partner in this funded initiative. LRSC will be collaborating with them as they provide clinical space, equipment, and assistance with curriculum-building and potential theory delivery. In the future, additional employer partners may be interested in a similar memorandum of agreement to upskill and recruit employees. See Attachment B: Letters of Support for a letter from Altru Health System.

Is this project offered in partnership with another NDUS institution?

LRSC has an articulation agreement with Mayville State University for surgical technicians to obtain 4-year nursing education after completion of the associate degree nursing program from LRSC. LRSC will seek articulation agreements with UND for the Medical/Clinical Lab Scientist program at UND. LRSC will seek articulation agreements with Minot State University and NDSU Ultrasound 4-year programming radiology technology (future).

The Surgical Technology program does not currently offer a four-year degree pathway. However, students interested in advancing their careers may pursue nursing education through Lake Region State College's Associate Degree Nurse program. Graduates of the ADN program can continue their education by transferring to a four-year institution, such as Mayville State University, through an existing articulation agreement to complete a Bachelor of Science in Nursing (BSN).

Does the project support a program already approved per SBHE policies and NDUS procedures?

Yes

Describe how the project is novel and innovative.

This project is novel and innovative for three reasons: 1) While other campuses offer allied health curriculums, none offer apprenticeships in all the listed occupations for which LRSC requests permission to develop and deliver. 2) The Allied Health programs offered by other two-year colleges do not utilize mobility modalities (distance learning) for all theory course and work-site apprenticeship training with employer partners. Only LRSC can deliver the entire package. 3) This project will support the purchase of equipment which is innovative in medical and healthcare education. The equipment includes an anatomy table for simulation, virtual reality goggles, and software for simulation including augmented reality capabilities, all of which can be used in distance learning theory classes (See Attachment C: Budget Summary and Justification for more details).

This initiative meets both the academic and clinical requirements for the LRSC associate degree...2,000 minimum work-based learning hours (minimal) and 144 classroom hours (minimal)...as required by the U.S. Department of Labor Apprenticeship Standards. This model has strong similarities to the nursing apprenticeship programs LRSC has developed in collaboration with the North Dakota Board of Nursing and U.S. Department of Labor.

Once students have completed their education and met the requirements for a federally registered apprenticeship, they will receive a federal certification stating they completed a federally registered apprenticeship program. The four occupations are approved for federal apprenticeships, except for radiology technician. The process of receiving approval for the radiology technician has begun with the assistance of a national apprenticeship intermediary specializing in healthcare occupation approval process. Because it is not approved yet, we included it in the timeline in Year 2 of this initiative to review the potential of adding it later. Federally registered apprenticeships are those of the highest standard in apprenticeships.

How will the project be sustained after WEIF Grant funding is expended?

Once the program is developed and available for delivery, the project will be sustained through the routine academic fees and tuition of LRSC and the final support of the employer to both LRSC as in-kind and student support dollars which cover tuition, fees, and books.

How will the project adapt over time to changing workforce needs and technological changes?

The beauty of apprenticeships is they stay current with workforce needs and technological changes/advancements and adapt over time to changing workforce skills requirements and competencies related to the scope of practice for each healthcare occupation and updates. Apprenticeship programs are employer-driven through the United States Department of Labor. New jobs and job titles are added or revised continually as the need for new competencies are developed. Employers hire student apprentices as employer partners under federal Apprenticeship Standards, and clinical requirements call for utilization of the most current equipment and practice in those occupational fields. As a result, if the key elements are embedded into the college's practices and programs, this project will not be outdated. For more information on the growth of federally approved apprenticeships see Data and Statistics | Apprenticeship.gov (<https://www.apprenticeship.gov/data-and-statistics>).

Attachment C:
Budget Summary
and
Budget Justification

BUDGET SUMMARY

The *LRSC Launch of Allied Health Apprenticeships Program Utilizing Mobility Modalities* program must use these funds to advance (as required by N.D.C.C. 15-10-7-75). These funds are identified and detailed in the budget and are also seen in the LRSC and Altru Health System Memorandum of Agreement Addendum (See Attachment A: MOA between LRSC and Altru Health System).

Identified program needs met:

- ☒ Curriculum development,
- ☒ Equipment and technology purchases,
- ☒ Facility modifications and equipment installations,
- ☒ Hiring and training new and existing instructors,
- ☒ Educational program promotion,
- ☒ Enhancement of postsecondary partnerships with primary and secondary schools.

Category	Year 1	Year 2	Total
1. LRSC Personnel	539,284	568,165	1,107,449
<i>Project Manager</i>	<i>13,417</i>	<i>14,068</i>	<i>27,485</i>
<i>Allied Health Apprenticeship Clinical Coordinator</i>	<i>99,599</i>	<i>105,045</i>	<i>204,644</i>
<i>Contracted Instructors (four)</i>	<i>426,268</i>	<i>449,052</i>	<i>875,320</i>
2. Equipment	214,659	0	214,659
3. Travel	6,352	3,176	9,528
4. Certification and Registry	5,000	11,000	16,000
5. Marketing	8,000	8,000	16,000
Total Direct Costs	773,295	590,341	1,363,636
6. Indirect Costs	77,330	59,034	136,364
Grand Total	850,625	649,375	1,500,000

BUDGET JUSTIFICATION AND DETAIL

1. PERSONNEL

Wages/Fringes	Year 1	Year 2	Total
a. Project Manager	13,417	14,068	\$27,485
b. New Allied Health Apprenticeship Clinical Coordinator	99,599	105,045	204,644
c. Contracted Instructors (4)	426,268	449,052	875,320
Total Personnel	539,283	568,165	1,107,449

* Wages calculated at 3-percent increase in salary each year and health insurance increase of 14 percent in year after the end of this grant.

a. New Project Manager wages are calculated based on 10% of the grant initiative and will be assigned to the current Resource Development/Corporate Liaison/ Apprenticeship Coordinator at LRSC who will report directly to the Vice President for Academic and Student Affairs.

Category	Year 1			Year 2		
	Salary	Fringe	Total	Salary	Fringe	Total
Project Manager	\$9,172	4,244	13,416	9,447	4,621	14,068

Year 1: Wages = $\$91,720 \times 10\% = \$9,172$, Fringes = $\$42,439 \times 10\% = \$4,244$
Total wages and fringes = **\$13,416**

Year 2: Wages = $\$94,471 \times 10\% = \$9,447$, Fringes = $\$46,212 \times 10\% = \$4,621$
Total wages and fringes = **\$14,068**

b. New Allied Health Apprenticeship Clinical Coordinator: This individual will be onsite (Altru) to coordinate all student apprenticeship schedules for clinical experiences. The Coordinator will function as the public partner liaison and work with both Allied Health and LRSC staff. This position reports to the LRSC Vice President for Academic and Student Affairs. This position is 1 FTE.

Category	Year 1			Year 2		
	Salary	Fringe	Total	Salary	Fringe	Total
Allied Health Apprenticeship Clinical Coordinator	63,242	36,317	99,559	65,139	39,906	105,045

c. LRSC Contracted Instructors: Positions are 10-month instructor positions. These individuals are licensed in the professions in which they are developing and teaching courses. Wages are based on current market ranges. There are 4 contracted instructor positions. These individuals will assist with curriculum development and provide course theory for each occupation. These positions report to LRSC Vice President for Academic and Student Affairs

Category	Year 1			Year 2		
	Wages	Fringe	Total	Wages	Fringe	Total
LRSC Instructor: Surgical Technician	69,010	37,557	106,567	71,080	41,183	112,263
LRSC Instructor: Ultrasound/ Sonographer	69,010	37,557	106,567	71,080	41,183	112,263
LRSC Instructor: Respiratory Therapy Technician	69,010	37,557	106,567	71,080	41,183	112,263
LRSC Instructor: Medical Lab Technologist	69,010	37,557	106,567	71,080	41,183	112,263
Total LRSC Instructors	276,040	150,228	426,268	284,320	164,732	449,052

2. EQUIPMENT

Item	Qty	Cost	Total
Anatomage Table, convertible bundle with 5-year warranty and shipping, tablets, cover, etc. (Quotes available for multiple variants)	1	105,390	105,390
Simulation software, based on virtual reality. Sim X-VR, 10 licenses	1	50,279	50,279
Simulation headsets for VR: 10 headsets, 10 extended batteries, 5 silicone face cover replacements	1	6,500	6,500
Dedicated Computer for VR (<i>optional - Surface Pro</i>)	2	1,245	2,490
Virtual Reality (VR) software from companies like SimX represents a transformative leap in how we educate the next generation of Allied Health professionals. Through immersive, interactive simulations, VR enables students to practice clinical decision-making, procedural skills, and patient communication in safe, repeatable environments that mirror real-life scenarios. This technology not only enhances engagement and retention of complex material but also bridges the gap between classroom learning and clinical practice. As healthcare demands grow and evolve, integrating VR into education ensures that LRSC Allied Health students are better prepared, more confident, and capable of delivering high-quality care from day one. The future of education is going to demand academics integrate virtual reality and augmented reality into learning for all students. We will engage in VR competency practice, validation, creation, etc. LRSC will own the rights. It will be available the second year as available in each occupation.	1	50,000	50,000
Total Equipment			214,659

* LRSC will utilize the NDUS bid process, which includes justification of purchases.

These academic courses are new for LRSC. Altru Health System will utilize equipment currently within their facilities to provide clinical experiences. This additional equipment is needed to meet grant outcomes and to provide learning experiences through simulation modalities both in theory and clinical lab experiences. Simulation will also support the mobility or distance learning modality for apprenticeships when students are not on campus.

3. TRAVEL

Category	Year 1	Year 2	Total
a. Devils Lake to Grand Forks	5,360	2,680	8,040
b. Devils Lake to Bismarck	992	496	1,487
Total Travel	6,352	3,176	9,527

Trips to Grand Forks are for instructor oversight who will deliver curriculum at the Career Impact Academy and Altru worksites. Trips to and from Devils Lake are for project management of the project initiative and staff supervision and for college-sharing student experiences in fieldwork and face-to-face, hands-on learning discussions between faculty, students, and staff. Trips to Bismarck are for meetings and presentations on healthcare workforce development.

- a. Round trip from Devils Lake to Grand Forks: 200 miles/trip x 40 trips/year x 1.5 years = 12,000 miles x 67¢/mile = **\$8,040**
- b. Round trip from Devils Lake to Bismarck: 370 miles/trip x 4 trips/year x 1.5 years = 2,220 miles x 67¢/mile = **\$1,487**

Total Travel = \$9,527

4. CERTIFICATION REGISTRATION

Category	Year 1	Year 2	Total
Certification, Audits, Registration	5,000	11,000	16,000
Total Certification Registration	5,006	11,000	16,000

Each of these four innovative programs must meet the standards of professional occupation organization/agency audits and earn accreditation from the Higher Learning Commission. The estimate of these costs is **\$16,000** (maximum).

5. MARKETING

Category	Year 1	Year 2	Total
Marketing	8,000	3,000	16,000
Total Marketing	8,000	8,000	16,000

Sustainability for this initiative will be financially supported by tuition and fees from the individual occupation programs at LRSC. Initial work should include development of a marketing plan with strategies to reach project stakeholders and potential students:

- Intentions to market for high school students and other adult learners

The Project Manager and the marketing departments of LRSC and Altru Health System will collaborate on the marketing plan to identify virtual messaging and written advertisements which reach these targeted groups.

6. INDIRECT COSTS @ 10%

Description	Year 1	Year 2	Total
Total Direct Costs	773,295	590,341	1,094,150
Indirect Costs (<i>Calculated at 10%</i>)	77,330	59,034	136,364
Total Direct plus Indirect Costs	850,625	649,375	1,500,000

NOTE: This project includes \$1,250,000 of in-kind support from Altru Health System, a dedicated, 3,124-square-foot education facility space. (See Attachment B: Letters of Support.

Total Grant Request: \$1,500,000.

Attachment A:
Memorandum of Agreement
between Lake Region State College
and Altru Health System
(Draft)

**Allied Health Memorandum of Agreement
between Lake Region State College and Altru Health System
for the Launch of Allied Health Apprenticeships Program utilizing Mobility Modalities**

— DRAFT —

This Memorandum of Agreement is executed on _____ [date] by and between **Lake Region State College**, 1801 College Drive North, Devils Lake, North Dakota 58301-1598, hereinafter “LRSC,” and **Altru Health System**, 1200 South Columbia Road, Grand Forks, North Dakota 58201, hereinafter “Altru.”

The parties hereby bind themselves to undertake a Memorandum of Agreement (“Agreement”) under the following terms and conditions:

Term. The term of this Agreement shall be _____ [years] unless terminated sooner in accordance with the terms of this Agreement (the “Term”).

Goals and objectives. LRSC (an academic institution and member of the North Dakota University System) is collaborating with Altru (a private, nonprofit healthcare employer in North Dakota) as an employer partner to launch apprenticeships in allied health occupations in North Dakota. The collaborative partnership includes joint designing/development and delivery of academic programs in specific allied health occupations.

The programs will meet the requirements of the North Dakota University System, the Higher Learning Commission, the Standards of Practice for each certified or licensed profession, and Standards of the U.S. Office of Apprenticeship.

The parties to this agreement shall abide by the terms of this agreement to achieve the Goals, Metrics and Objectives, Benchmarks/Timelines, and Outcomes in Addendum 1: Goals, Process Measurements, and Outcome Metrics (Page 5).

Obligations of the Parties.

LRSC shall fulfill the following obligations:

1. Develop curriculum utilizing current academic codes within the NDUS for academic courses in the following academic certification/degree programs: surgical technician, respiratory therapy, medical laboratory technician, ultrasound technician
2. Collaborate with North Dakota state licensing credentialing agencies/boards to ensure the academic programs meet practice requirements
 - Verify Higher Learning Commission approval of the curriculum(s)
3. Ensure the programs meet federal standards of approved apprenticeship occupations
4. Secure qualified faculty (competent to teach in specific occupations) to teach and deliver (including distance-learning modalities and work-based learning) the academic courses

5. Provide mentorship training as needed to meet federal Standards of Apprenticeship for mentoring students
6. Secure articulation agreements with other North Dakota academic universities to provide career ladder opportunities from associate to bachelors degrees in identified occupations
7. Engage in a high school CTE pilot project for youth apprenticeships in allied health occupations

Altru shall perform the following obligations:

1. Meet the requirements of an employer partner, as obligated by the U.S. Department of Apprenticeship, and of the LRSC Earn and Learn Employer agreement
2. Provide expert guidance to assist LRSC design/develop and deliver academic coursework in the noted occupations
3. Provide clinical site(s) for the required work-based learning for both the academic coursework and apprenticeship Standards
4. Assist with securing academic faculty to teach the academic courses and provide clinical oversight

Confidentiality. Subject to sub-clause (ii) below, each party shall treat as strictly confidential all information received or obtained because of entering or performing this Agreement.

Each party may disclose information which would otherwise be confidential if and to the extent the information is

- (i) required by the law of any relevant authority and/or
- (ii) the information has come into the public domain through no fault of that party, or the other party must approve the disclosure in writing after consultation and notice.

Relation to the parties. The nature of the relationship between LRSC and Altru is that of participating partners.

Consideration. This Agreement is based on the following considerations:

Representations and Warranties. Each party to this Agreement represents and warrants to the other party that

- (a) they have full power, authority, and legal right to execute and perform this Agreement;
- (b) they have taken all necessary legal and corporate action to authorize the execution and performance of this Agreement;
- (c) this Agreement constitutes the legal, valid, and binding obligations of such party in accordance with its terms; and

- (d) they shall act in good faith to give effect to the intent of this Agreement and to take such other action as may be necessary or convenient to consummate the purpose and subject matter of this Agreement.

Termination. Either party may terminate its performance of related obligations under this Agreement if the other party fails to rectify a material breach under a portion of this Agreement within thirty (30) days of receipt by the breaching party of written notice of such breach from non-breaching party. If one Party breaches the agreement, the other Party may cancel their involvement without notice and still claim damages. The parties agree that the failure or termination of any obligations or provisions of this Agreement, unless the failure or breach is such that the entire Agreement loses all its value to the non-breaching party.

Any termination of this Agreement shall not absolve the parties from the obligation to observe the confidentiality measures and other restraints as set out herein.

Remedies for Default. In addition to any and all other rights a party may have available according to law, if a party defaults by failing to substantially perform any provision, term, or condition of this Contract (including without limitation the failure to make a monetary payment when due), the other party may terminate the Agreement by providing written notice to the defaulting party. This notice shall describe the fault in sufficient detail. The party receiving such notice shall have thirty (30) days from the effective date of such notice to correct the default(s) unless waived by a party providing notice, the failure to correct the default(s). If the period passes, it shall result in automatic termination of this Agreement.

Force Majeure. If performance of this Agreement or any obligation under this Agreement is prevented, restricted, or interfered with by causes beyond either party's reasonable control ("Force Majeure"), and if the party unable to carry out its obligations gives the other party prompt written notice of such event, then the obligations of the party invoking this provision shall be suspended to the extent necessary by such event. The term Force Majeure shall include, without limitation, acts of God, plagues, epidemic, pandemic, outbreaks of infectious disease or any other public health crisis, including quarantine or other employee restrictions, fire, explosion, vandalism, storm, other similar occurrences, orders or acts of military or civil authority, or by national emergencies, insurrections, riots, wars, or strikes, lockouts, work stoppages. The affected party shall make reasonable efforts to resolve non-performance and promptly resume duties once resolved. An act or omission shall be deemed within the reasonable control of a party if committed, omitted, or caused by such party, or its employers, officers, agents, or affiliates.

Arbitration. All disputes arising from this Agreement shall be resolved through binding arbitration in accordance with the Commercial Arbitration Rules of the American Arbitration Association. The parties shall select a mutually acceptable arbitrator knowledgeable about issues relating to the subject matter of this Agreement. In the event the parties are unable to agree to such a decision, each party will select an arbitrator, and the two arbitrators in turn shall select a third arbitrator, all three of whom shall preside jointly over the matter. The arbitration shall take place at a location that is centrally located between the two parties, or otherwise mutually agreed upon by the parties. Each party must provide all relevant documents and information to the other

party within thirty (30) days after receiving the arbitration notice. The arbitrator(s) shall not have the authority to modify any provision of this Agreement or to award damages. The arbitrator(s) shall issue mandatory orders and restraint orders in connection with arbitration. The arbitrator's decision is final, binding, and enforceable by any competent court. The agreement to arbitration shall be specifically enforceable under the prevailing arbitration law. During the continuance of any arbitration proceeding, the parties shall continue to perform their respective obligations under this Agreement.

Confidentiality. Both parties acknowledge that during this Agreement, each may obtain confidential information regarding the other party's business. Both parties agree to treat all such information and the terms of this Agreement as confidential and to take all reasonable precautions against disclosure of such information to unauthorized third parties during and after the term of this Agreement. Confidential documents must be returned to their owners when requested.

Notice. Notifications or communications under this Agreement may be delivered in person or by certified mail to the specified addresses or any addresses provided in writing. A notice is deemed received upon delivery and signature acknowledgment, or three days post mailing if no acknowledgment is provided.

Entire Agreement. This Agreement contains the entire agreement of the parties regarding the subject matter of this Agreement, and there are no other promises or conditions in any other agreement, whether oral or written. This Agreement supersedes any prior written or oral agreements between the parties.

Amendment. Any changes to this Agreement must be written and signed by both parties.

Severability. If any part of this Agreement is invalid or unenforceable, the rest will remain in effect. If a court finds any portion of this Agreement to be invalid or unenforceable, it will be deemed valid and enforceable with appropriate limitations.

Waiver of Contractual Rights. A party's failure to enforce any part of this Agreement does not waive their right to enforce all provisions later.

Governing Law. This agreement is subject to the laws of North Dakota.

Signatories. President Doug Darling will sign this Agreement for Lake Region State College, and Cory Geffre, Executive Vice President Hospital Operations and Chief Nursing Director at Altru Health System will sign and effective as of the date first written above.

Lake Region State College: _____
Carmen Simone, Interim President

Altru Health System: _____
Cory Geffre, Executive Vice President Hospital Operations/Chief Nursing Director

ADDENDUM 1:
GOALS,
PROCESS MEASUREMENTS,
AND
OUTCOME METRICS

GOALS, PROCESS MEASUREMENTS, AND OUTCOME METRICS FOR SUCCESS

• GOALS

1. To develop strong public/private partnerships to support the recruitment and retention of the Allied Health professionals utilizing apprenticeships
2. To develop and deliver curriculum utilizing mobility (distance learning) modalities which support apprenticeships where students live and seek work (off-campus)
3. To design an apprenticeship model that can be replicated in other colleges and universities and in other occupations

A key to developing a successful model is the inclusion of systems oversight of structure, process, and outcome measurements. LRSC has significant strength in apprenticeship program building and staff expertise utilizing a structured Continuous Quality Improvement and Case Management System for its Earn and Learn Apprenticeship Program.

• PROCESS MEASUREMENTS

This initiative is required to meet three sets of Standards;

1. LRSC will meet those of the U.S. Department of Labor Office of Apprenticeship which are audited by the Office of Apprenticeship for compliance.
2. LRSC academic programs go through the rigor of the Higher Learning Commission and oversight of the North Dakota University System.
3. LRSC educational programs must also adhere to structured curriculum for students to take a certification or licensing exam to be qualified to work in a specific occupation.

• OUTCOME MEASUREMENTS

Results for measuring LRSC's AHAPM project success are as identified in the following objectives met and estimated project timeline identified for each measurable benchmark. Also identified are the identified 'Needs met' within this proposal and a statement for a follow up or second grant proposal to meet the intent of LRSC's overall vision of the launch of allied health apprenticeship initiative.

TABLE 1: OBJECTIVES, BENCHMARK AND MEASUREMENT, TIMELINE TO BE ACHIEVED

Objectives	Benchmark and Measurement	Timeline
1. Engage Project Manager and V.P. Academic and Student Affairs to oversee Allied Health LRSC occupation programs	Ensure all agreements for funding are in place. Position to recruit faculty members. Secure contract payments and other required documents with Altru Health System.	Within 30 days of grant approval

Allied Health Memorandum of Agreement between LRSC and Altru Health System (Draft)

Page 7

Objectives	Benchmark and Measurement	Timeline
2. Instructors to teach courses are identified	Identify and secure faculty, enroll them, and attend the instructor program. <i>Need met: Hiring and training of new and existing instructors</i>	Summer 2025
3. Secure equipment	Obtain equipment, obtain bids for items if necessary <i>Need met: Equipment and technology purchases and installation</i>	Summer 2024
4. Establish processes to meet the standards	Have processes in place to include elements necessary for audits.	Summer 2025
5. Secure curriculum for four healthcare occupations	Identify course plan, and obtain approval from NDUS <i>Need met: Develop curriculum</i>	Summer/Fall 2025
6. Develop work processes specific for each occupation utilizing U.S. DOL list of approved apprenticeships	Modify the work processes in collaboration with the employer partner and agreements with the US DOL Office of Apprenticeship	Winter 2025/2026
7. Secure articulation agreements with universities	Obtain course plans, draft articulation agreements to develop/implement specific allied health programs with Minot State University, University of ND, ND State University, and Mayville State. <i>Need met: Enhancement of post-secondary partnerships with primary and secondary schools</i>	Winter 2025/2026
8. Begin youth apprenticeship pilot project with Grand Forks high school CTE program(s) in allied health occupations	Secure Memorandum of Understanding with Eric Ripley at Grand Forks High School CTE, write and submit grant applications to a private foundation. <i>Need met: Enhancement of post-secondary partnerships with primary and secondary schools</i>	Winter 2025/2026
9. Identify course delivery dates	Meet with stakeholders to lock down start dates for specific programs	Winter/Spring 2026
10. Implement marketing plan	Develop the marketing plan to include all stakeholders and collaborative partners. <i>Need met: Education program promotion</i>	Spring 2025
11. TrainND begins planning for non-academic offerings	Identify target courses and marketing strategies.	Winter 2026

Allied Health Memorandum of Agreement between LRSC and Altru Health System (Draft)

Page 8

Objectives	Benchmark and Measurement	Timeline
12. Develop and initiate CQI	Establish continuous quality improvement plan for this project and incorporate new apprenticeships into the LRSC Earn and Learn database.	Winter 2026
13. Begin review of the potential of adding the occupation of radiology technician to the list of allied health apprenticeships	Contact HCAP (HOME HCAP - Health Career Advancement Program) to check on the status of the radiology technician acceptance to the list of approved apprenticeship occupations. Consider alternative non-federally approved apprenticeship options if not.	Spring 2026
14. TrainND Northeast delivers curriculum for each non-academic program	Delivery of at least one program	Spring 2026
15. Report to the NDUS at six months	All apprenticeship occupational programs are being delivered utilizing mobility modality	Spring 2026
16. The LRSC Earn and Learn program has established Allied Health apprenticeships into its system.	The Earn and Learn Apprenticeship staff manages apprenticeship details on behalf of the employer, and LRSC faculty delivers curriculum. Employer and employer mentors are committed to and guiding the work-based learning components of apprenticeship	Ongoing project benchmarks of implementation until the end of June 30, 2027, and beyond

Attachment B:
Letters of Support
for
LRSC Launch of
Allied Health Apprenticeships
Utilizing Mobility Modalities

Dr. Doug Darling, President2
Lake Region State College

Cory Geffre, Executive VP Hospital Operations/Chief Nursing Officer4
Altru Health System

Brady Ash, Executive Director6
Devils Lake Economic Development Corporation

Keith Lund, President/CEO8
Grand Forks Region Economic Development Corporation

Eric Ripley, Executive Director10
Grand Forks Public Schools Career Impact Academy



1801 College Drive North, Devils Lake, ND 58301-1598

(701) 662-1600 • Fax (701) 662-1570 • 1-800-443-1313
TDD (701) 662-1572 • www.lrsc.edu

June 28, 2025

Chair, Workforce Education Innovation Program
North Dakota University System
10th Floor State Capital
600 East Boulevard Ave, Dept 15
Bismarck, North Dakota 58505-2030

RE: Grant application from Lake Region State College and Altru Health System to the
North Dakota Workforce Education Innovation Program

Dear WEIP Grant Review Committee,

It is with strong conviction that I provide my endorsement for the grant proposal aimed at establishing allied health apprenticeship programs utilizing a distance learning framework referred to as the Mobility Model. As Lake Region State College collaborates with Altru Health System, I recognize the transformative potential this initiative holds for both regional workforce development and educational advancement.

The allied health sector constitutes a vital pillar in the healthcare infrastructure, and the growing need for qualified professionals is undeniable. This program proposes an innovative response to workforce demands by combining advanced remote learning methodologies with practical, on-the-job training facilitated by Altru Health System. Students will engage in coursework specifically designed to cater to diverse learning preferences while simultaneously acquiring hands-on experience at employer-based sites. This dual approach ensures that participants are not only academically prepared but also fully equipped to meet the operational requirements of allied health careers.

The commitment demonstrated by Altru Health Services in providing structured worksite experiences for apprentices is particularly commendable. By fostering opportunities for participants to directly engage in the real-world dynamics of healthcare professions, this partnership bridges the essential gap between theoretical learning and practical application. This collaborative model empowers students to develop core competencies, build professional networks, and gain confidence, all while contributing meaningfully to the local workforce.

We enhance lives and community vitality through quality education.

Application to NDUS NDWEIP from Lake Region State College

June 28, 2025 | Page 2

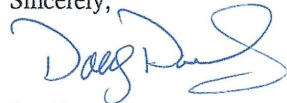
At Lake Region State College, we are dedicated to aligning our efforts with regional economic and workforce development priorities. The availability of funding for this initiative will enable us to extend allied health programs to students who prefer alternatives to traditional campus-based education, thereby enhancing accessibility. Additionally, the apprenticeship model promotes success by integrating education with employment, fortifying the talent pipeline for healthcare industries and driving community and economic growth.

Our institution is fully committed to ensuring the success of this program. Preparations are already underway to integrate the surgical technologist apprenticeship within our healthcare offerings, ensuring compliance with academic and industry standards. We are also committed to providing sustained institutional support to apprentices, equipping them with the resources and mentorship necessary to achieve both academic and professional success through our Earn and Learn Apprenticeship Program.

In conclusion, I strongly advocate for the funding of the Allied Health Apprenticeship Programs initiative, leveraging innovative distance learning strategies alongside employer-based training components. This program represents a significant advancement in workforce development efforts, aligning education with current and future economic needs. Together with Altru Health System, Lake Region State College is prepared to advance this groundbreaking initiative, fostering a skilled, adaptable, and thriving healthcare workforce.

Thank you for considering this proposal. Should further information be required, please do not hesitate to reach out.

Sincerely,



Dr. Doug Darling
President

ddg



June 19, 2025

Chair
ND WEIP Grant Review Committee
NDUS
10th Floor State Capital
600 East Boulevard Ave, Dept 15
Bismarck, North Dakota 58505-2030

RE: Grant application from Lake Region State College and Altru Health System to the North Dakota Workforce Education Innovation Program

Dear NDUS WTEIP Grant Review Committee:

It is with great pleasure that I write this letter of support as a collaborative partner in this allied health profession workforce initiative. Altru Health System approached Lake Region State College seeking information about potentially developing academic training programs in allied health, particularly for ultrasound technicians. Altru Health System has recently replaced a significant amount of radiology and ultrasound equipment with Leona Helmsley Trust funds through a grant application. To properly utilize this new equipment, we need more ultrasound and radiology technicians.

Lake Region State College researched the state need for additional technicians in allied health occupations and during a joint meeting identified the need in all occupations, most specifically in these five occupations at Altru Health locations in Devils Lake and Grand Forks, North Dakota. So, the partnership began.

It was serendipitous that the WEIF funding opportunity was announced at this time. Altru Health System is very excited to participate in development and delivery of the programs to support our workforce needs in allied health positions. We wholeheartedly support the methodology LRSC offers through their nursing program using distance learning. We have been extremely pleased with the quality of program management and the support we receive from the apprenticeship management team and faculty. The funding for the initiative of the LRSC Launch of Allied Health Apprenticeship Program would support us, as the employer partners with LRSC, significantly.

P.O. Box 6002 | Grand Forks, ND 58206-6002 | 701.780.5000 | altru.org

Additionally, Altru Health System has partnered with Lake Region State College to support the development of a 3,214-square-foot facility on Altru campus dedicated to the College's program, with an estimated renovation cost of \$1.25 million

Please consider strongly supporting this application and reach out if you have any questions or concerns regarding this collaboration or application for funding.

Sincerely,



Cory Geffre
Exec. V.P. Hospital Operations /Chief Nursing Officer
Altru Health System



**Letter of Support from Devils Lake Economic Development
Lake Region State College WEIF Application
June 19, 2025**

Chair, Grant Review Committee
NDWEIP
North Dakota University System
10th Floor, State Capital Building
600 East Boulevard Ave, Dept. 15
Bismarck, North Dakota 58505-2030

RE: Grant application from Lake Region State College and Altru Health System to the North Dakota Workforce Education Innovation Program

Dear NDUS WEIP Grant Review Committee:

Thank you for the opportunity to write this letter of support regarding Lake Region State College and its newest initiative in apprenticeships. Our community is very proud of their work. LRSC has a long history of bringing innovative projects to fruition, and this application is an example of their forward thinking. LRSC is one of the key partners in our ecosystem of economic and workforce development across the state. For years, they have provided distance learning opportunities for individuals in rural communities off campus.

It is not surprising LRSC is seeking to expand the number of health care educational programs they offer. They are one of the leaders in their nursing programs. Our office supports the efforts of Altru and LRSC in their endeavors to provide workforce training and educational opportunities to other healthcare providers, specifically allied health professionals. Our community is experiencing a severe shortage in healthcare occupations.

This application for program expansion ... the *Lake Region State College Launch of Allied Health Apprenticeship Programs utilizing Mobility Modalities* ... is supported by our office and constituents.

Apprenticeships serve as a mechanism for economic revitalization. By offering meaningful career opportunities to residents, these programs help to address unemployment and underemployment, which are often prevalent in rural areas. The result is a more stable and self-sufficient community where individuals can thrive both professionally and personally.



The ripple effects of healthcare apprenticeships extend beyond the workplace. When healthcare providers are adequately staffed, patients enjoy better access to timely and high-quality care, improving overall health outcomes. Moreover, the presence of skilled professionals in rural communities fosters a sense of trust and security among residents, reinforcing the social fabric that binds these areas together.

In conclusion, healthcare apprenticeships are more than a solution to workforce shortages—they are a beacon of hope for rural healthcare employers and communities alike. By investing in these programs, we can create a future where access to healthcare is no longer a privilege defined by geography, but a right upheld by the strength and stability of local professionals.

I urge committee members to champion healthcare apprenticeships as a cornerstone of workforce development and community wellness. Together, we can build a healthier, more resilient future for rural areas across the country.

Yours sincerely,

A handwritten signature in black ink, appearing to read "Brady Ash", is written over a light blue horizontal line.

Brady Ash, Executive Director
Forward Devils Lake Economic Development



June 19, 2025

Chair
North Dakota Workforce Education Innovation Program
North Dakota University System
10th Floor, State Capital
600 East Boulevard Ave, Dept 15
Bismarck, ND 58505-2030

RE: Grant application from Lake Region State College and Altru Health System to the North Dakota Workforce Education Innovation Program

Dear WEIF Grant Review Committee:

I am writing to express my support for the implementation and expansion of healthcare apprenticeships as a vital strategy to strengthen workforce stability and enhance access to quality care in rural communities. These programs represent a transformative approach to addressing critical challenges faced by healthcare employers and the communities they serve. It is exciting to see work being done in this area with the collaborative efforts of Altru Health System and Lake Region State College.

Healthcare apprenticeships offer a unique pathway for employers to cultivate a skilled and sustainable workforce. By integrating on-the-job training with structured education, these programs allow apprentices to gain hands-on experience while learning the theoretical underpinnings of their roles. This dual approach ensures that employees are not only proficient in practice but also deeply committed to the values and standards of their healthcare organizations.

Rural healthcare employers face acute challenges in recruiting and retaining qualified professionals due to geographic and resource constraints. Apprenticeships address these issues by creating a pipeline of local talent, individuals who are more likely to remain in their communities when given opportunities for career growth and development. Furthermore, apprenticeships can reduce hiring costs and turnover rates, as participants are nurtured within the organizational culture from the outset, fostering loyalty and long-term commitment.

Healthcare providers in all occupations are not just caregivers; they are lifelines to their communities, often operating with limited staff and resources. Apprenticeship programs contribute to workforce stability by empowering residents to become healthcare professionals, thereby reducing dependence on external recruitment. This localized approach not only strengthens the workforce but also enhances the resilience of healthcare systems in rural regions.

Altru Health System is one of the cornerstone employers in northeast North Dakota and serves as one of the largest medical systems in the state. It contributes an essential part of the strength and stability of Grand Forks.

I very much support Altru Health System and Lake Region State College in this application to further fund workforce development through their partnership to launch allied health apprenticeships at a distance from the campus in Devils Lake.

Thank you for the opportunity to submit this letter of support.

Sincerely,



Keith Lund
President and CEO

cc: Cory Geffre, Altru Health System
Melana Howe, Lake Region State College



Eric Ripley
Executive Director, Career
& Technical Education
Grand Forks Public Schools
Career Impact Academy
Direct Phone: 701.746.2205, ext. 7117
Fax: 701.772.7739
eripley270@mygfschools.org

June 23, 2025

WEIP Grant Review Committee
North Dakota University System
10th Floor State Capital
600 East Boulevard Ave., Dept. 15
Bismarck, North Dakota 58505-2030

RE: Grant application from Lake Region State College and Altru Health System to the North Dakota Workforce Education Innovation Program

NDUS WEIP Grant Review Committee:

Thank you for the opportunity to support Lake Region State College (LRSC) and Altru Health System as they engage in the Allied Health education initiative to offer apprenticeship opportunities in healthcare careers for students interested in pursuing their life's work in allied health occupations.

Eighty percent of employers in healthcare claim moderate to severe shortages. As a nation, we desperately need to expand the pipeline of qualified individuals to fill these shortages. The country's economic health relies on a balanced demand for and supply of skills. We must engage students (and their parents) earlier and more actively in their career and educational decisions.

We provide strong Career and Technical Education (CTE) programs for students within the Grand Forks Public School system, and are excited to open a new CTE facility to serve our entire region for the 2025-2026 school year. The Career Impact Academy is a community-led project, highlighted by over 90 industry partners, to strengthen and expand on the available CTE program offerings, including Health Sciences, for both students of Grand Forks and surrounding rural communities. In addition, our planning efforts focused on Work-Based Learning (WBL) being an essential student outcome within the Career Impact Academy was selected by the US Department of Education as a national finalist for the "Career Z Challenge," focused on the development and sustainability of WBL ecosystems within regional communities.

We proudly collaborate with both LRSC and the Altru Health System as we seek to support students as they make career choices. Case in point, both LRSC and Altru Health System have representation on the Career Impact Academy steering committee. We would be very interested in working with LRSC on these current and future projects, as we consider developing employer engagements in apprenticeships, especially in youth apprenticeships.

Sincerely,

Eric Ripley
Executive Director of Career & Technical Education



Mark Sanford Education Center
2400 47th Ave. S
Grand Forks, ND 58201-3405



PO Box 6000
Grand Forks, ND 58206-6000



www.gfschools.org

Equal opportunity employer

Grand Forks School District prohibits discrimination and harassment based on race, color, religion, sex, sexual orientation, gender identity, gender expression, national origin, ancestry, disability, age, or other status protected by law. The District also provides equal access to the Boy Scouts and other designated youth groups, as required by federal law.



Application Number.

22

Institution.

Mayville State University

Applicant Name.

Brian J. Huschle

Applicant Title.

Vice President for Academic Affairs

Applicant Department.

Academic Affairs

Project Title.

New Program Development: Healthcare Informatics

Briefly describe the proposed project.

This project develops a Bachelor of Science (BS) in Healthcare Informatics, addressing regional workforce needs. Pulling from Lightcast data, we have a higher than national demand for healthcare informatics professionals in our region. Currently, there is a service gap as no NDUS institutions offer this program. Within this project, we plan to offer a 120 credit BS degree. We will further explore the marketability of a reduced credit BAS degree option and include that degree option if the workforce market supports it.

This program leverages our existing nursing program, nursing faculty, and planned nursing simulation lab. We currently have a Nursing Informatics track within our Master of Science in Nursing (MSN), and this program further expands this area of expertise to Healthcare Informatics at the undergraduate level.

The initial plan is that this program will be hybrid, with significant portions of the curriculum being online, synchronous. Elements of the program will be in-person. We plan to offer the in-person elements in condensed formats to focus the required time on campus, thereby serving rural students and providers as well as adult learners.

Does the proposal meet the statutory guidance of N.D.C.C. 15-10-75?

Yes

Indicate which statutory objective this proposal will advance (as required by N.D.C.C. 15-10-75).

Curriculum Development; Equipment & technology purchases; Facility modifications and equipment installation; Hiring and training new and existing instructors; Education program promotion; Enhancement of postsecondary partnerships with primary and secondary schools

Briefly describe how the funds will advance the objectives.

- As a new program, funds will be used to support curriculum development. This will primarily be through hiring of a faculty member within the content field. Additional costs may be associated with curriculum development through engaging industry partners to ensure appropriate applied skills are incorporated throughout the program.
- This program will require purchasing and licensing of industry specific software, including electronic health record (EHR) systems and clinical platforms such as Epic, eClinicalWorks, HealthStream, and Meditech.
- We plan to hire a faculty with industry experience during the 2025-2026 academic year to assist with curriculum and program design. We will retain this faculty to launch the program during the 2026-2027 academic year for ongoing industry partnership development, course development, simulation lab activity development, and student recruitment. Additional faculty resources will be required no later than the second year of the program, during the 2026-2027 academic year, to fully develop simulation lab and coursework. We anticipate the additional faculty position having a shared instructional role across related departments, including Allied Health, Nursing, and/or Business, and being 0.5 FTE within this project. While we intend to hire faculty with direct industry experience, we further anticipate costs in cross training new faculty on common software tools, simulation equipment, as well as providing training within instruction and course design. Additional faculty within the nursing and allied health areas, either part-time or full-time faculty overload, may be required for instruction of core courses as well as courses unique to this new program.
- Funds will be used to market the program throughout ND and Western Minnesota, raising awareness of this unique new program opportunity. Effort will be made to reach both adult learners and traditional college aged learners.
- This unique program may be added to Golden Path Solutions Compass app, with work-based learning opportunities in the Healthcare industry available for high school students. Mayville State University is a partner with Golden Path Solutions in working to develop the Compass Application. This application is integrated into RU Ready through 2027, currently, and has over 23,000 students in North Dakota and Western Minnesota engaged on the platform. We will further participate in career fair opportunities throughout the region, educating middle and high school students about the Health Informatics career path.

When will the proposed project be ready to admit students?

Fall 2026

If later than Fall 2027, please describe why the program start will be delayed and when the program expects to admit students.

Fall 2026 for BS track. Fall 2027 for BAS track.

Amount of funding requested.

\$662,500

What other sources of funding or resources support the proposed project?

Our simulation lab for Nursing will be a shared resource for scenarios and data analysis with this program. This will also allow interprofessional learning, a benefit we will be able to provide as a small institution.

Foundation funds for first year and transfer student scholarships will also support this program, as well as additional scholarship opportunities.

Finally, instructional reallocation (shared with nursing and allied health) will support this program.

Which identified workforce development need will this project address?

With respect to the North Dakota Department of Commerce identified occupations, this program meets general needs in the Healthcare industry. Lightcast data reflects aggressive job posting demands within the three-state area of North Dakota, South Dakota, and Minnesota. It further reflects higher salaries than the national average, with Sanford Health as one of the top three employers.

What are the project's metrics for success? How will these metrics be achieved?

Success of this project will be measured in four ways.

- On-schedule launch of program
- Enrollment of 15 majors within the first year of the program
- Ongoing enrollment of 15 to 20 new majors annually
- 90% or higher placement of graduates in related jobs

Project success will be a result of program development, marketing, and implementation.

How does the project support student retention in North Dakota to meet the needs of local industries?

Students will complete internships and field experiences, and through this develop relationships with employers within North Dakota and the surrounding region. Through serving traditional and adult students in our region with a flexible program in a high paying field, we will advance meeting the needs of our health care profession.

How are the students supported by this project prepared to enter the workforce with minimal additional on-the-job training?

Healthcare informatics enhances efficiency, communication, and patient care throughout the healthcare system, and application of simulated platforms provides hands-on experience needed for a quick and smooth transition into this healthcare career. Our curriculum prepares students with technical knowledge and skills, provides hands on experience for key elements through a shared simulation lab, and will require students to complete an internship.

This program is further planned to be developed with a dual design, with a 120 credit BS degree alongside a reduced credit BAS degree option. This design will allow transfer students and many adult learners a fast and direct way into the workforce while supporting traditional students through a full Bachelor of Science pathway, better preparing them for advanced studies at the graduate level.

Are there private sector partners in creating/offering the project?

We will partner with key healthcare partners (Sanford, Essentia, Altru) in building the curriculum and maintain those relationships through an ongoing advisory board.

Is this project offered in partnership with another NDUS institution?

Not applicable

Does this project support a program already approved per SBHE policies and NDUS procedures?

No

If not previously approved, is the project unique in the NDUS system? If not, is the proposed duplication justified?

This program is unique within the NDUS system.

The nearest public institution to offer the program is Minnesota State University, Mankato. Lightcast reporting reflects this is the only program currently producing graduates within North Dakota, South Dakota, and Minnesota.

Describe how the project is novel and innovative.

A novel aspect of this program is the efficiency we will gain through overlap with our BSN and MSN curriculum in nursing informatics. This design allows a gain of efficiency through shared coursework, sharing of a medical simulation lab, and sharing of faculty. Mor importantly, it will provide a cross disciplinary learning environment, preparing professionals to work within the dynamic health care industry. Finally, it will open our current informatics training and expertise to those pursuing healthcare careers in informatics outside of the nursing pathway.

A second planned aspect for the program includes a hybrid delivery model, allowing much of the course work to be completed online, with short intensive sessions completed within the shared simulation lab and local internship placements.

A further innovative aspect of the program is the planned launch of both BS and reduced credit BAS degree options within the program.

How will the project be sustained after WEIF Grant funding is expended?

The project will be sustained through tuition revenue and state appropriation tied to Mayville State University enrollment.

Existing Mayville State Scholarship funds available to first year and transfer students.

We will work to develop industry partnerships that support the program through additional scholarship funding and/or employer sponsored training.

How will the project adapt over time to changing workforce needs and technological changes?

Maintaining an active advisory board and close industry relationships through internship or practicum placements.

Mayville State University
B.S. and B.A.S. in Healthcare Informatics Program Development

Proposed Budget

Faculty Position(s)

- Year 1: 1 FTE faculty hire for 2025-2026, including summer 2026:	\$135,000
- Year 2: Continuation of 1 FTE:	\$135,000
- Year 2: Additional 0.5 FTE faculty hire:	\$ 67,500
- Year 2: Adjunct Faculty and/or faculty overload:	\$ 25,000

Faculty Professional Development

- Year 1: Training in instruction and design:	\$ 12,000
- Year 2: Training in instruction and design:	\$ 12,000

Program Development and Consultation

- Expenses for simulation development with consultation:	\$ 75,000
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Industry Software licensing and operating expenses

- Year 1: Licensing and operating expenses:	\$ 25,000
- Year 2: Licensing and operating expenses:	\$ 25,000

Program Marketing

- Year 1: Initial marketing for program launch:	\$ 85,000
- Year 2: Ongoing marketing:	\$ 50,000
- Year 1 and Year 2: High School partnership programming:	\$ 16,000

Total Anticipated Expenses for FY 26 and FY 27:	\$662,500
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Program Overview

Medical Informatics

Lightcast Q2 2025 Data Set

June 2025

Parameters

Completions Year: 2023

Jobs Timeframe: 2024 - 2034

Job Postings Timeframe: Jun 2024 - May 2025

Programs:

Code	Description
51.2706	Medical Informatics

Regions:

Code	Description	Code	Description
27	Minnesota	46	South Dakota
38	North Dakota		

Education Level:

Description
Bachelor's degree

Tuition Type: Tuition & Fees

Graduate Status: Undergraduate

Residency: In-State

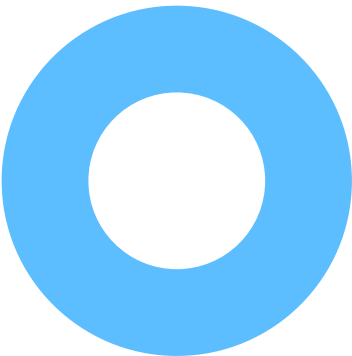
There are not enough institutions in this search to display this information.

Program Overview



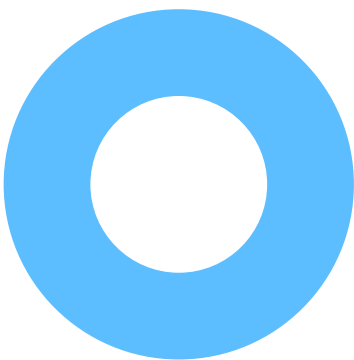
	Completions (2023)	% Completions	Institutions (2023)	% Institutions
● All Programs	2	100%	1	100%
● Distance Offered Programs	0	0%	0	0%
● Non-Distance Offered Programs	2	100%	1	100%

Market Share by Institution Type




Institution Type	Completions (2023)	Market Share
● Public, 4-year or above	2	100.0%

Market Share by Program



Program	Completions (2023)	Market Share
● Medical Informatics (51.2706)	2	100.0%

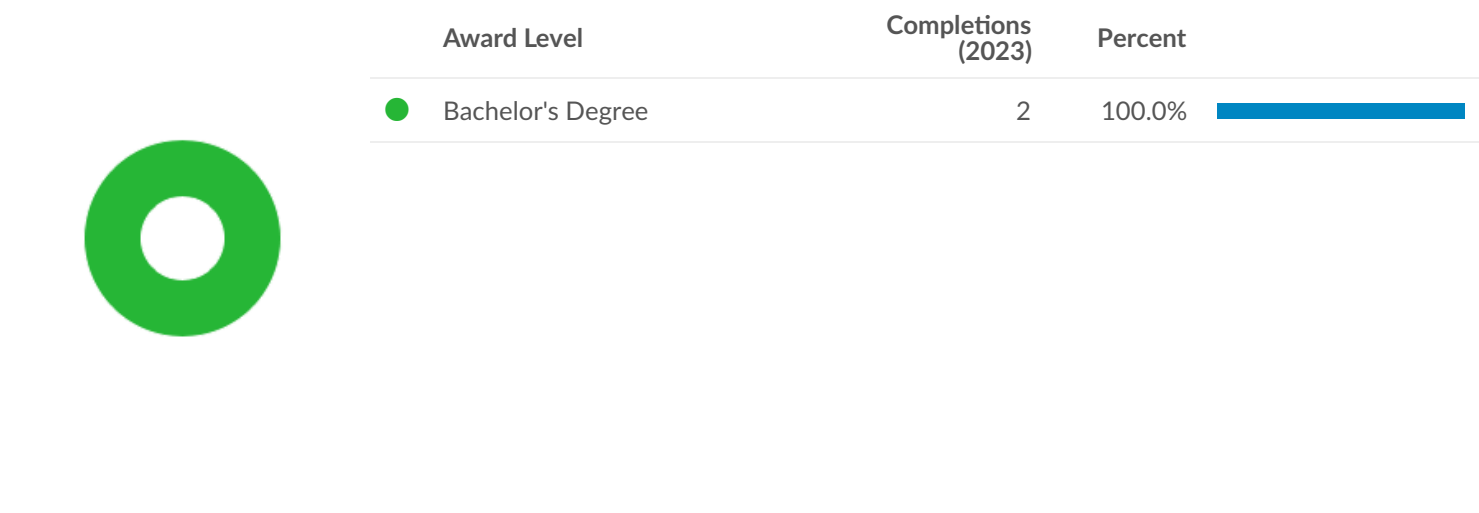
Completions by Institution

Institution	Bachelor's Degree Completions (2023)	Growth % YOY (2023)	Market Share (2023)	IPEDS Tuition & Fees (2023)	Completions Trend (2019-2023)
Minnesota State University-Mankato	2	Insf. Data	100.0%	\$9,490	

Regional Trends



Regional Completions by Award Level



Similar Programs

97 Programs (2023)		19,892 Completions (2023)
CIP Code	Program	Bachelor's Degree Completions (2023)
51.3801	Registered Nursing/Registered Nurse	9,421
26.0101	Biology/Biological Sciences, General	1,835
11.0701	Computer Science	1,328
52.1401	Marketing/Marketing Management, General	1,191
27.0101	Mathematics, General	593
51.0701	Health/Health Care Administration/Management	528
40.0501	Chemistry, General	393
51.3818	Nursing Practice	331
11.1003	Computer and Information Systems Security/Auditing/Information Assurance	296
51.0000	Health Services/Allied Health/Health Sciences, General	281

Target Occupations

**Filtered by the proportion of the national workforce in these occupations with a Bachelor's degree*

37,908 Jobs (2024)* 5% <i>below</i> National average*	+14.8% % Change (2024-2034)* Nation: +22.4%*	\$53.82/hr \$112.0K/yr Median Earnings Nation: \$56.82/hr; \$118.2K/yr	2,901 Annual Openings*
---	--	--	---------------------------

Occupation	2024 Jobs*	Annual Openings*	Median Earnings	Growth (2024 - 2034)*	Employment Concentration (2024)*
Software Developers	22,735	1,685	\$58.48/hr	+16.25%	1.06
Computer Systems Analysts	6,004	400	\$50.55/hr	+5.36%	0.98
Medical and Health Services Managers	4,156	430	\$54.26/hr	+25.36%	0.87
Computer Occupations, All Other	2,549	200	\$45.09/hr	+11.81%	0.54
Medical Records Specialists	713	55	\$27.41/hr	+7.29%	0.98
Database Administrators	619	41	\$44.71/hr	+6.62%	0.74
Database Architects	497	33	\$61.64/hr	+5.43%	0.69
Statisticians	439	39	\$38.89/hr	+22.10%	1.38
Computer and Information Research Scientists	195	17	\$72.49/hr	+18.97%	0.48

Job Postings Summary

<div>25,279</div> <div>Unique Postings</div> <div>55,239 Total Postings</div>	<div>2 : 1</div> <div>Posting Intensity</div> <div><div></div></div> <div>Regional Average: 3 : 1</div>	<div>2,612</div> <div>Employers Competing</div> <div>32,807 Total Employers</div>	<div>24 days</div> <div>Median Posting Duration</div> <div>Regional Average: 25 days</div>
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There were 55,239 total job postings for your selection from June 2024 to May 2025, of which 25,279 were unique. These numbers give us a Posting Intensity of 2-to-1, meaning that for every 2 postings there is 1 unique job posting.

This is close to the Posting Intensity for all other occupations and companies in the region (3-to-1), indicating that they are putting average effort toward hiring for this position.

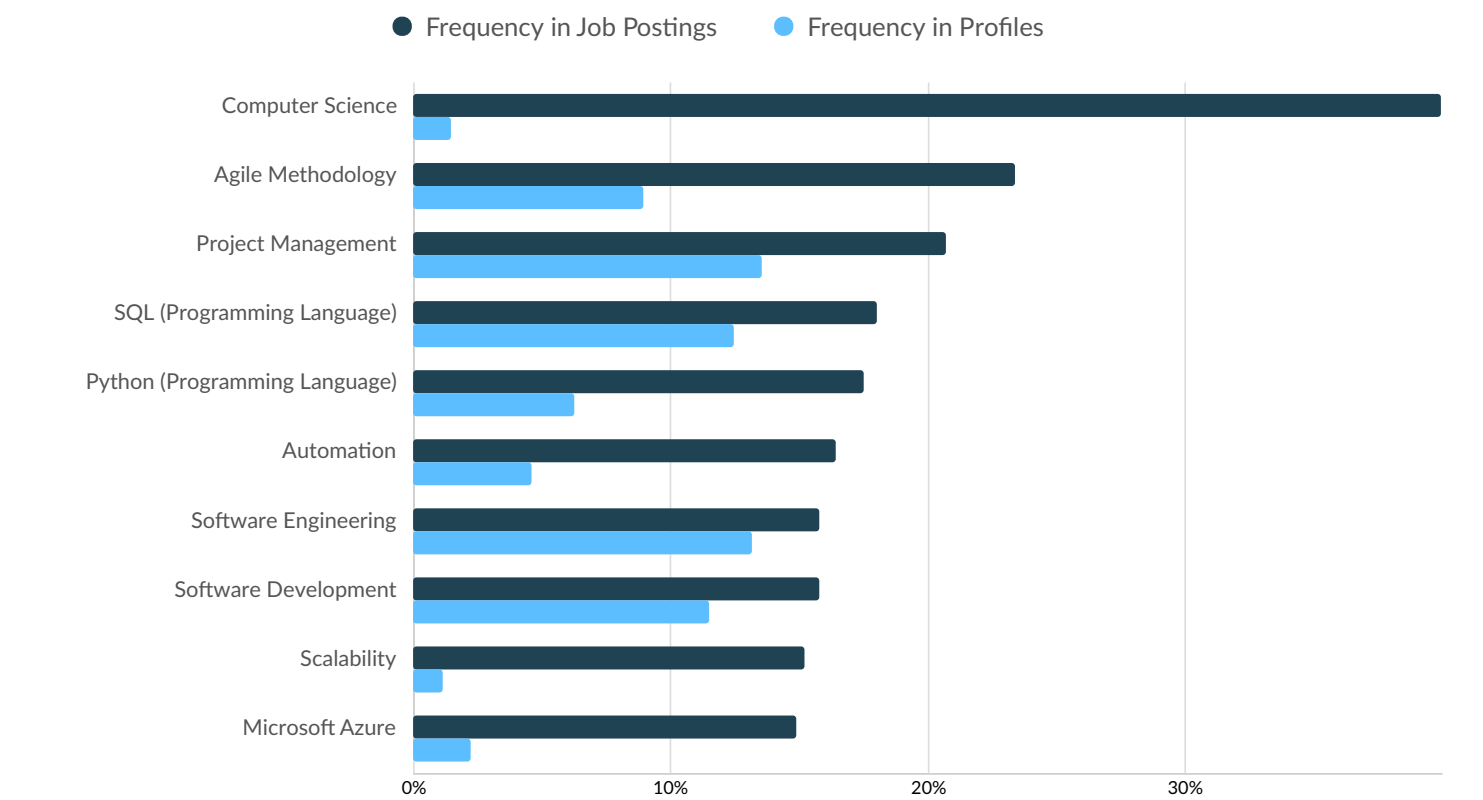
Top Companies Posting

Company	Total/Unique (Jun 2024 - May 2025)	Posting Intensity	Median Posting Duration
State of Minnesota	862 / 520	2 : 1 <div></div>	24 days
Mayo Clinic	1,535 / 429	4 : 1 <div></div>	17 days
Lumen Technologies	652 / 373	2 : 1 <div></div>	22 days
GovCIO	538 / 349	2 : 1 <div></div>	24 days
Accenture	505 / 327	2 : 1 <div></div>	25 days
Medtronic	942 / 300	3 : 1 <div></div>	32 days
Prime Therapeutics	615 / 300	2 : 1 <div></div>	24 days
Ford	444 / 296	2 : 1 <div></div>	23 days
Sanford Health	1,072 / 288	4 : 1 <div></div>	26 days
UnitedHealth Group	634 / 277	2 : 1 <div></div>	20 days

Top Posted Job Titles

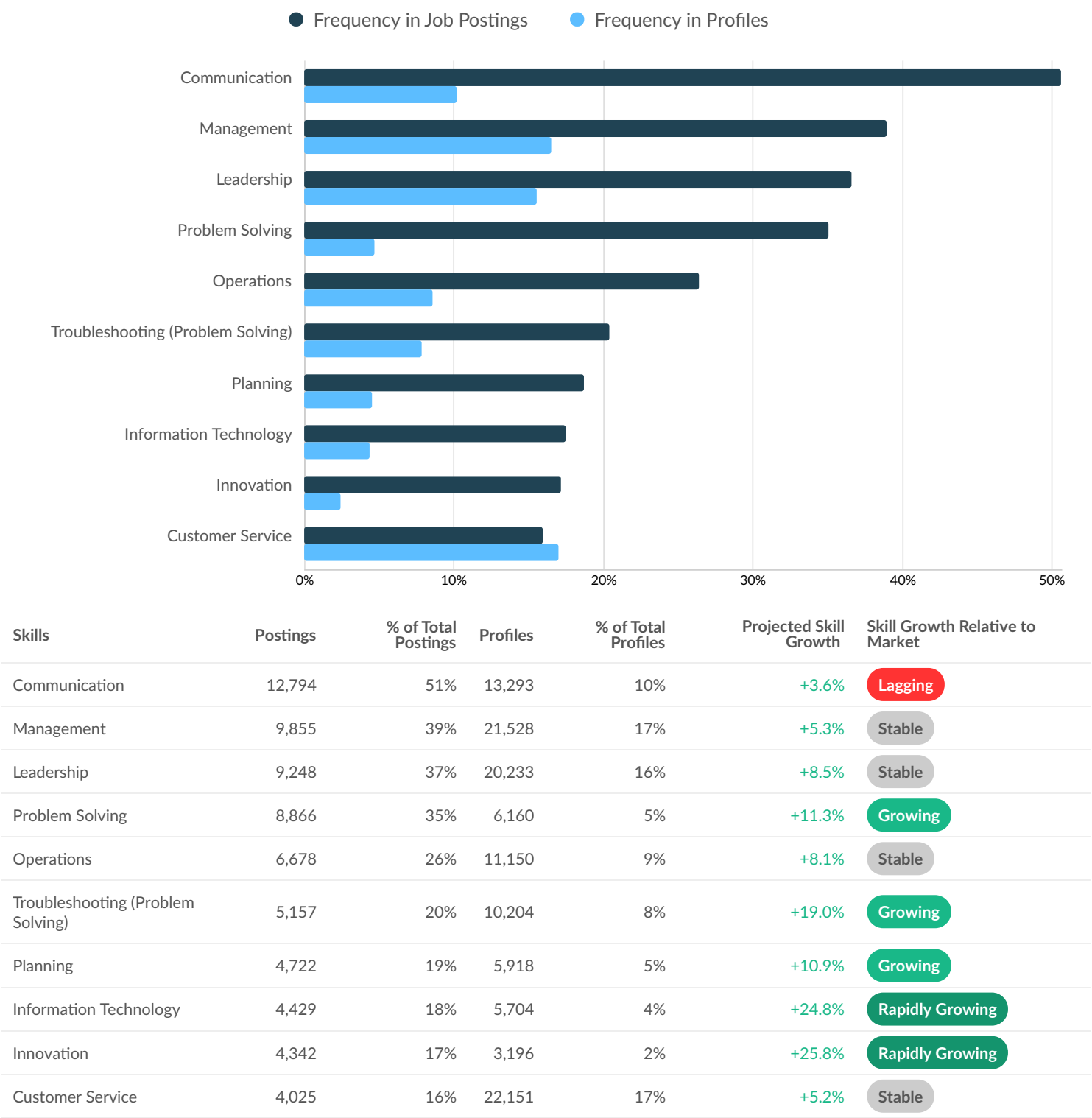
Job Title	Total/Unique (Jun 2024 - May 2025)	Posting Intensity	Median Posting Duration
Software Engineers	2,384 / 982	2 : 1 	23 days
Systems Engineers	705 / 333	2 : 1 	21 days
Data Engineers	631 / 318	2 : 1 	24 days
Solutions Architects	672 / 277	2 : 1 	24 days
Business Systems Analysts	516 / 255	2 : 1 	19 days
Software Developers	478 / 216	2 : 1 	27 days
Full Stack Developers	469 / 192	2 : 1 	16 days
Product Owners	395 / 192	2 : 1 	24 days
Principal Software Engineers	448 / 177	3 : 1 	26 days
IT Project Managers	358 / 173	2 : 1 	27 days

Top Specialized Skills

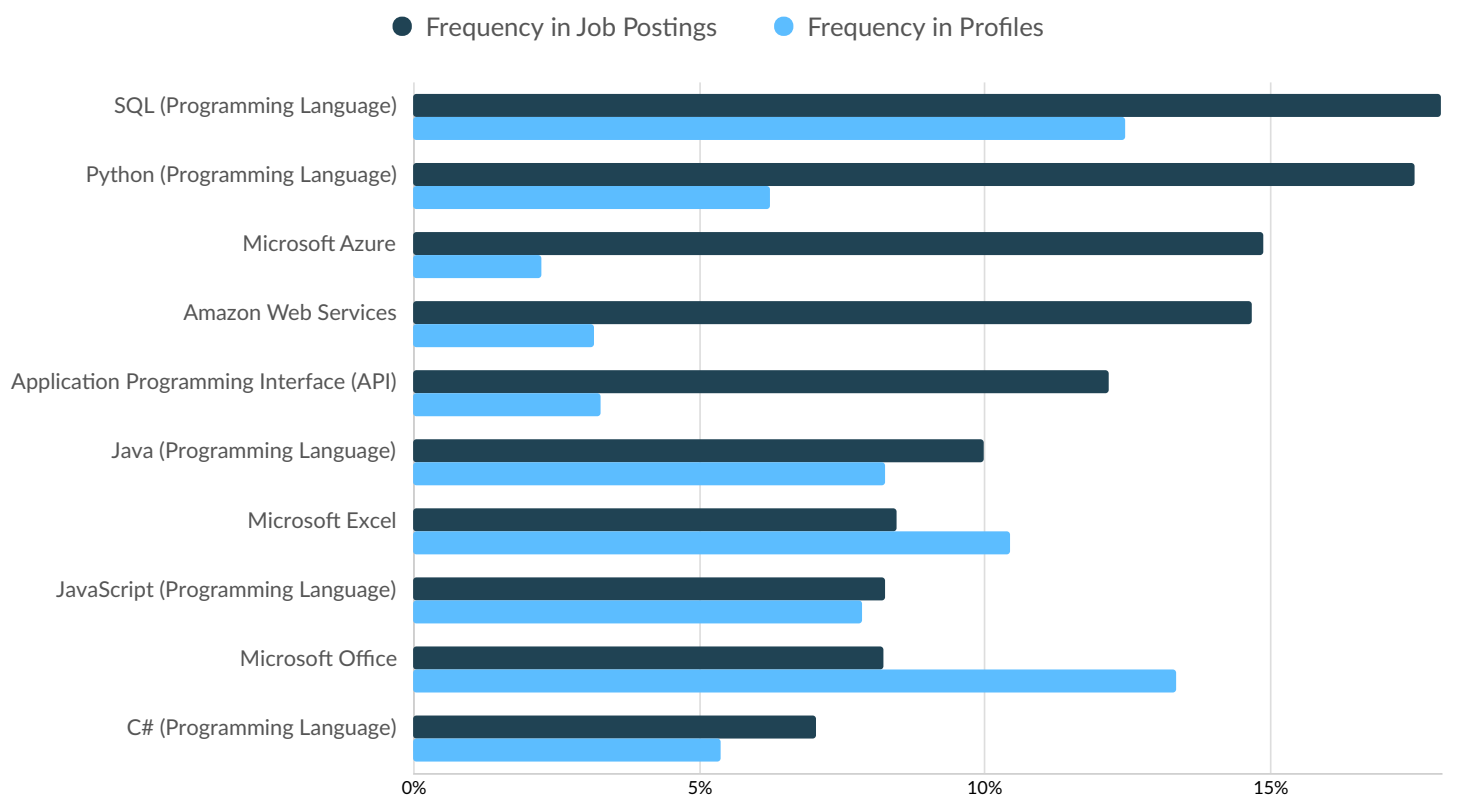


Skills	Postings	% of Total Postings	Profiles	% of Total Profiles	Projected Skill Growth	Skill Growth Relative to Market
Computer Science	10,102	40%	1,953	1%	+26.8%	Rapidly Growing
Agile Methodology	5,916	23%	11,648	9%	+19.8%	Rapidly Growing
Project Management	5,236	21%	17,618	14%	+19.8%	Rapidly Growing
SQL (Programming Language)	4,550	18%	16,245	12%	+6.4%	Stable
Python (Programming Language)	4,435	18%	8,132	6%	+24.5%	Rapidly Growing
Automation	4,148	16%	5,955	5%	+30.5%	Rapidly Growing
Software Engineering	3,994	16%	17,147	13%	+23.1%	Rapidly Growing
Software Development	3,992	16%	14,989	12%	+23.2%	Rapidly Growing
Scalability	3,851	15%	1,507	1%	+25.2%	Rapidly Growing
Microsoft Azure	3,765	15%	2,938	2%	+28.9%	Rapidly Growing

Top Common Skills



Top Software Skills



Skills	Postings	% of Total Postings	Profiles	% of Total Profiles	Projected Skill Growth	Skill Growth Relative to Market
SQL (Programming Language)	4,550	18%	16,245	12%	+6.4%	Stable
Python (Programming Language)	4,435	18%	8,132	6%	+24.5%	Rapidly Growing
Microsoft Azure	3,765	15%	2,938	2%	+28.9%	Rapidly Growing
Amazon Web Services	3,713	15%	4,142	3%	+24.0%	Rapidly Growing
Application Programming Interface (API)	3,078	12%	4,257	3%	+9.5%	Growing
Java (Programming Language)	2,526	10%	10,781	8%	+17.4%	Growing
Microsoft Excel	2,138	8%	13,597	10%	+17.7%	Growing
JavaScript (Programming Language)	2,089	8%	10,230	8%	+18.6%	Growing
Microsoft Office	2,082	8%	17,396	13%	+18.5%	Growing
C# (Programming Language)	1,785	7%	7,011	5%	+16.1%	Growing

Top Qualifications

Qualification	Postings with Qualification
Certified Information Systems Security Professional	1,024
Valid Driver's License	839
Registered Nurse (RN)	772
Project Management Professional Certification	620
Certified Information Security Manager	548
Master Of Business Administration (MBA)	450
Certified Information System Auditor (CISA)	423
CompTIA Security+	362
Security Clearance	362
GIAC Certifications	352

Appendix A

Program Selection Details

CIP Code	Program Name
51.2706	Medical Informatics

Appendix B - Data Sources and Calculations

Institution Data

The institution data in this report is taken directly from the national IPEDS database published by the U.S. Department of Education's National Center for Education Statistics.

Location Quotient

Location quotient (LQ) is a way of quantifying how concentrated a particular industry, cluster, occupation, or demographic group is in a region as compared to the nation. It can reveal what makes a particular region unique in comparison to the national average.

Occupation Data

Lightcast occupation employment data are based on final Lightcast industry data and final Lightcast staffing patterns. Wage estimates are based on Occupational Employment Statistics (QCEW and Non-QCEW Employees classes of worker) and the American Community Survey (Self-Employed and Extended Proprietors). Occupational wage estimates are also affected by county-level Lightcast earnings by industry.

Lightcast Job Postings

Job postings are collected from various sources and processed/enriched to provide information such as standardized company name, occupation, skills, and geography.

State Data Sources

This report uses state data from the following agencies: Minnesota Department of Employment and Economic Development; North Dakota Job Service; South Dakota Department of Labor and Regulation



Health Information Technologists and Medical Registrars in 3 States

Contents

What is Lightcast Data?	1
Report Parameters	2
Executive Summary	3
Jobs	4
Compensation	6
Job Posting Activity	7
Demographics	11
Occupational Programs	14
Appendix A	15

What is Lightcast Data?

Lightcast data is a hybrid dataset derived from official government sources such as the US Census Bureau, Bureau of Economic Analysis, and Bureau of Labor Statistics. Leveraging the unique strengths of each source, our data modeling team creates an authoritative dataset that captures more than 99% of all workers in the United States. This core offering is then enriched with data from online social profiles, resums, and job postings to give you a complete view of the workforce.

Lightcast data is frequently cited in major publications such as *The Atlantic*, *Forbes*, *Harvard Business Review*, *The New York Times*, *The Wall Street Journal*, and *USA Today*.



Report Parameters

1 Occupation

29-9021 Health Information Technologists and Medical Registrars

3 States

27	Minnesota	46	South Dakota
38	North Dakota		

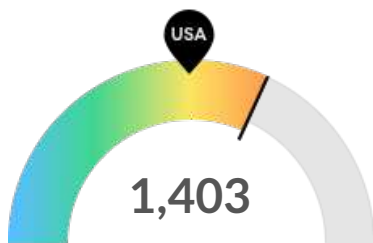
Class of Worker

QCEW Employees and Non-QCEW Employees

The information in this report pertains to the chosen occupation and geographical areas.

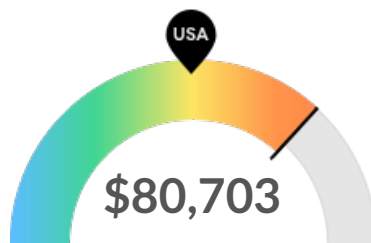
Executive Summary

Aggressive Job Posting Demand Over a Deep Supply of Regional Jobs



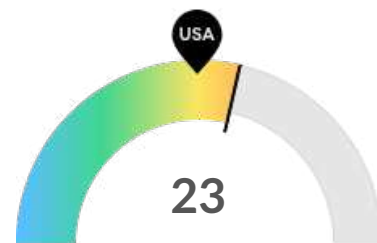
Jobs (2024)

Your area is a hotspot for this kind of job. The national average for an area this size is 959* employees, while there are 1,403 here.



Compensation

Earnings are high in your area. The national median salary for Health Information Technologists and Medical Registrars is \$67,309, compared to \$80,703 here.



Job Posting Demand

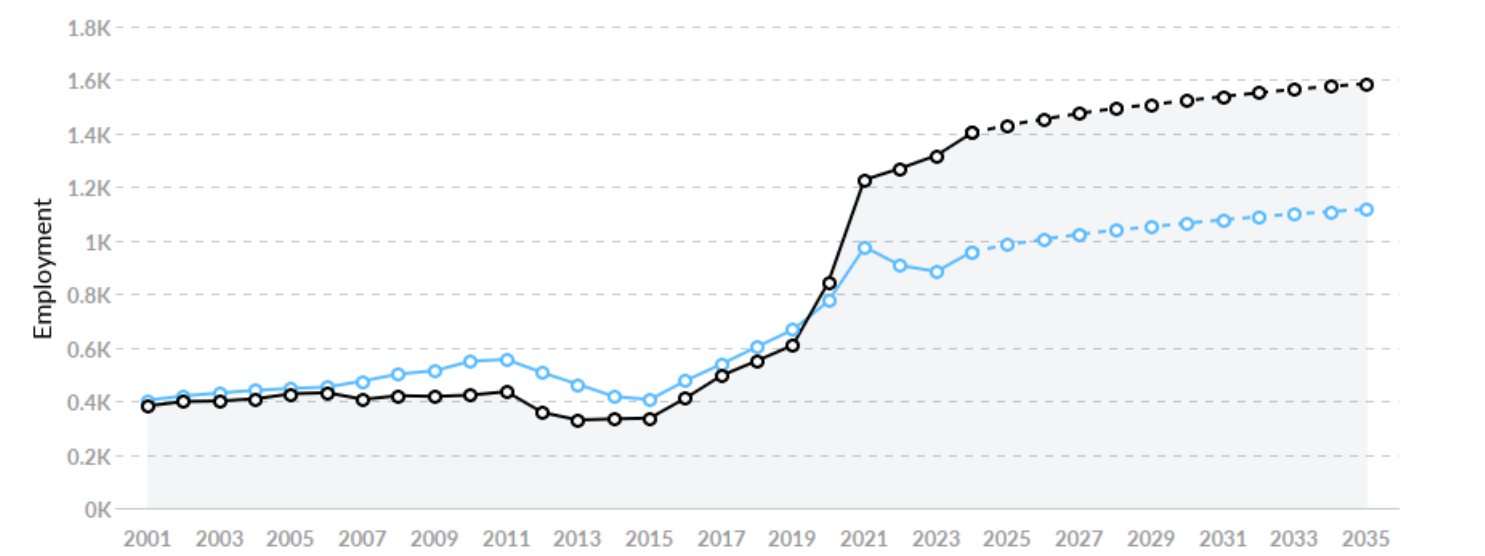
Job posting activity is high in your area. The national average for an area this size is 19* job postings/mo, while there are 23 here.

*National average values are derived by taking the national value for Health Information Technologists and Medical Registrars and scaling it down to account for the difference in overall workforce size between the nation and your area. In other words, the values represent the national average adjusted for region size.

Jobs

Regional Employment Is Higher Than the National Average

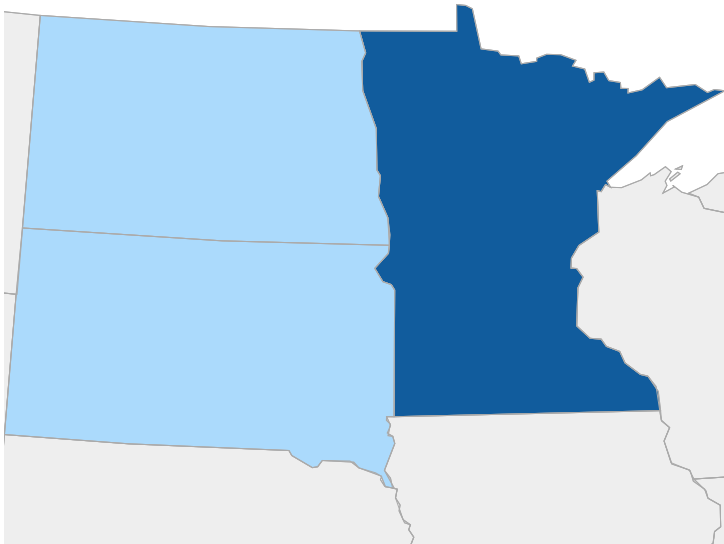
An average area of this size typically has 959* jobs, while there are 1,403 here. This higher than average supply of jobs may make it easier for workers in this field to find employment in your area.



	Region	2024 Jobs	2034 Jobs	Change	% Change
●	3 States	1,403	1,576	173	12.3%
●	National Average	959	1,108	149	15.6%

*National average values are derived by taking the national value for Health Information Technologists and Medical Registrars and scaling it down to account for the difference in overall workforce size between the nation and your area. In other words, the values represent the national average adjusted for region size.

Regional Breakdown



State	2024 Jobs
Minnesota	1,111
South Dakota	214
North Dakota	79

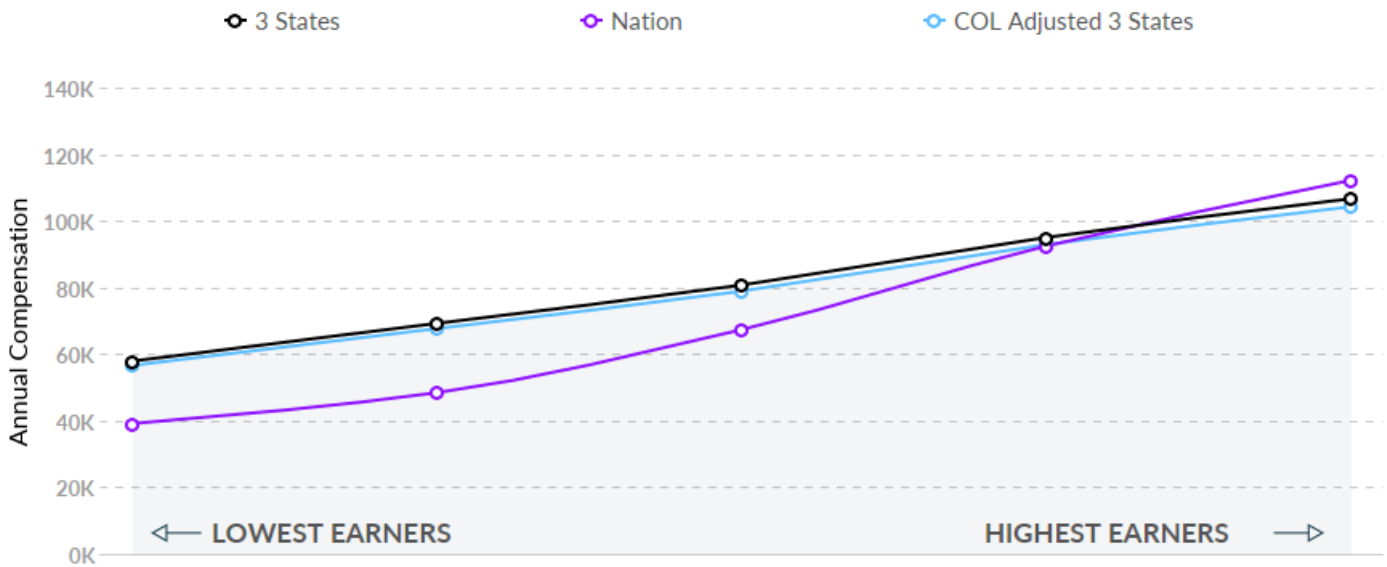
Most Jobs are Found in the General Medical and Surgical Hospitals Industry Sector



Compensation

Regional Compensation Is 20% Higher Than National Compensation

For Health Information Technologists and Medical Registrars, the 2024 median wage in your area is \$80,703, while the national median wage is \$67,309.



Job Posting Activity



397 Unique Job Postings

The number of unique postings for this job from Jan 2024 to May 2025.



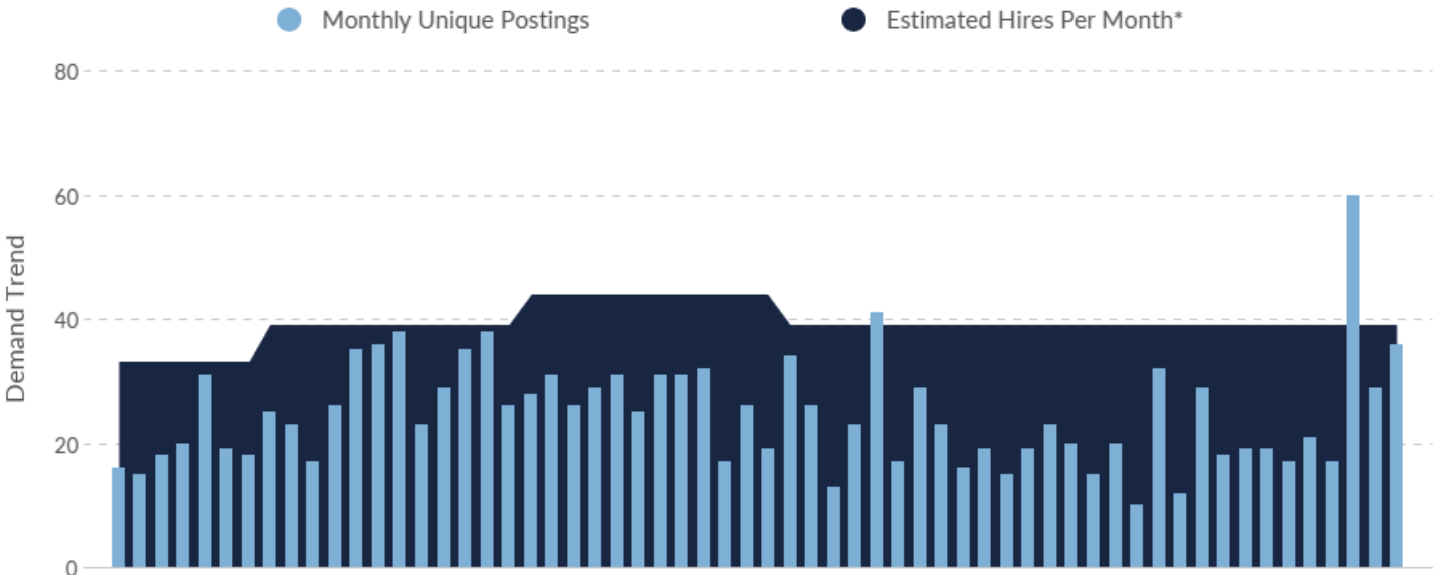
90 Employers Competing

All employers in the region who posted for this job from Jan 2024 to May 2025.



25 Day Median Duration

Posting duration is the same as what's typical in the region.



Occupation	Avg Monthly Postings (Jan 2024 - May 2025)	Avg Monthly Hires (Jan 2024 - May 2025)
Health Information Technologists and Medical Registrars	23	39

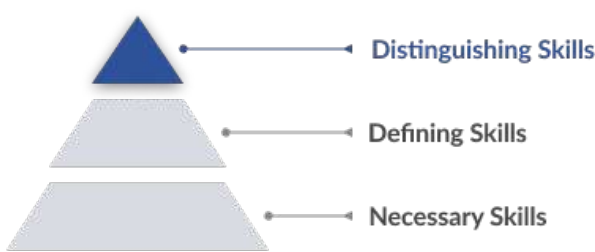
*A hire is reported by the Quarterly Workforce Indicators when an individual's Social Security Number appears on a company's payroll and was not there the quarter before. Lightcast hires are calculated using a combination of Lightcast jobs data, information on separation rates from the Bureau of Labor Statistics (BLS), and industry-based hires data from the Census Bureau.

Top Companies	Unique Postings
Datavant	53 <div></div>
State of Minnesota	41 <div></div>
Sanford Health	38 <div></div>
Mayo Clinic	34 <div></div>
Avera Health	23 <div></div>
Intermountain Health	10 <div></div>
Conifer Revenue Cycle Solutions	7 <div></div>
Good Samaritan Society	7 <div></div>
United States Department of He...	7 <div></div>
Baylor Scott & White Health	6 <div></div>

Top Job Titles	Unique Postings
Health Information Specialists	100 <div></div>
Health Information Managemen...	47 <div></div>
Clinical Support Specialists	28 <div></div>
Health Information Managemen...	24 <div></div>
Health Information Managemen...	23 <div></div>
Cancer Registrars	17 <div></div>
Certified Cancer Registrars	10 <div></div>
Police Records Technicians	10 <div></div>
Release of Information Specialists	10 <div></div>
Release of Information Technicia...	9 <div></div>

Top Distinguishing Skills by Demand

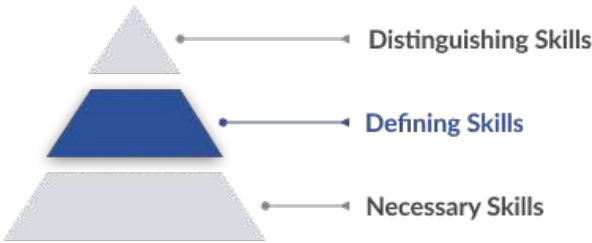
An occupation's Distinguishing Skills are the advanced skills that are called for occasionally. An employee with these skills is likely more specialized and able to differentiate themselves from others in the same role.



Skill	Salary Boosting	Job Postings Requesting	Projected Growth	Growth Relative to Market
Cancer Registry	✖	21	+7.3%	Stable
Certified Tumor Registrar	✖	6	+1.0%	Lagging

Top Defining Skills by Demand

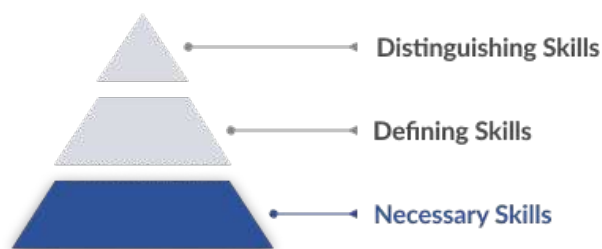
An occupation's Defining Skills represent the day-to-day tasks and responsibilities of the job. An employee needs these skills to qualify for and perform successfully in this occupation.



Skill	Salary Boosting	Job Postings Requesting	Projected Growth	Growth Relative to Market
Medical Records	×	300	+12.5%	Growing
Electronic Medical Record	×	226	+12.1%	Growing
Health Information Management	×	134	+7.5%	Stable
Medical Terminology	×	114	+10.8%	Growing
Data Entry	×	94	+2.6%	Lagging
Release of Information (ROI)	×	93	+10.9%	Growing
Opening Mail	×	50	-2.5%	Lagging

Top Necessary Skills by Demand

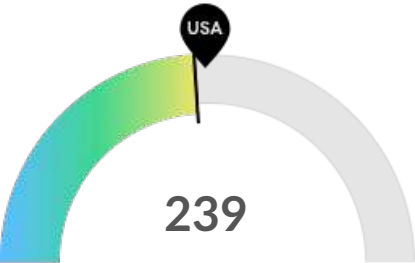
An occupation's Necessary Skills are the specialized skills required for that job and relevant across other similar jobs. An employee needs these skills as building blocks to perform the more complex Defining Skills.



Skill	Salary Boosting	Job Postings Requesting	Projected Growth	Growth Relative to Market
Registered Health Information Technician (RHIT)	×	107	-2.6%	Lagging
Registered Health Information Administrator (RHIA)	×	88	+14.5%	Growing
Workflow Management	×	86	+18.0%	Growing
Protected Health Information	×	84	+15.5%	Growing
Auditing	×	72	+21.8%	Rapidly Growing
Office Equipment	×	67	+16.7%	Growing
Medical Privacy	×	67	+16.6%	Growing
Process Improvement	×	58	+27.0%	Rapidly Growing
Document Imaging	×	56	+9.3%	Growing
Outbound Calls	×	54	+21.5%	Rapidly Growing

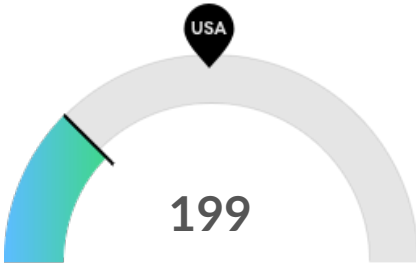
Demographics

Retirement Risk Is About Average, While Overall Diversity Is Low



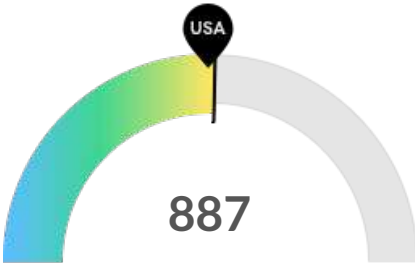
Retiring Soon

Retirement risk is about average in your area. The national average for an area this size is 254* employees 55 or older, while there are 239 here.



Racial Diversity

Racial diversity is low in your area. The national average for an area this size is 483* racially diverse employees, while there are 199 here.

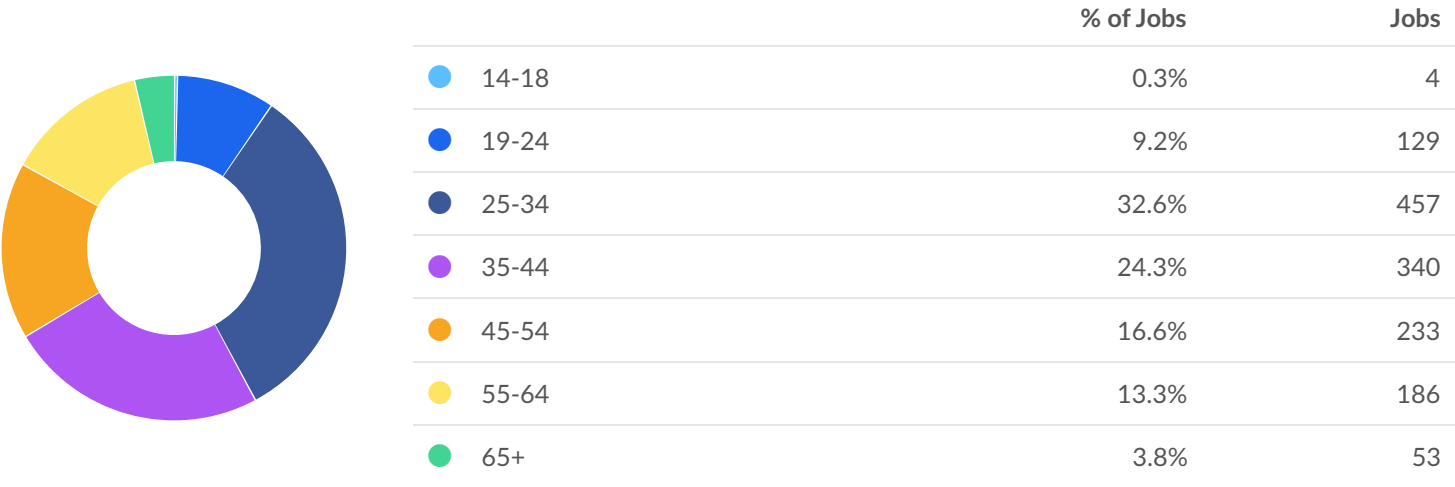


Gender Diversity

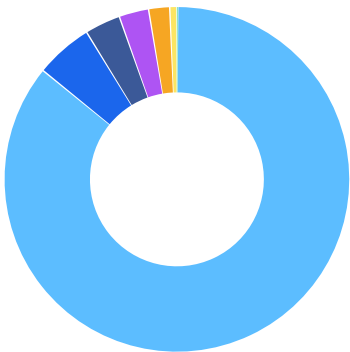
Gender diversity is about average in your area. The national average for an area this size is 867* female employees, while there are 887 here.

*National average values are derived by taking the national value for Health Information Technologists and Medical Registrars and scaling it down to account for the difference in overall workforce size between the nation and your area. In other words, the values represent the national average adjusted for region size.

Occupation Age Breakdown

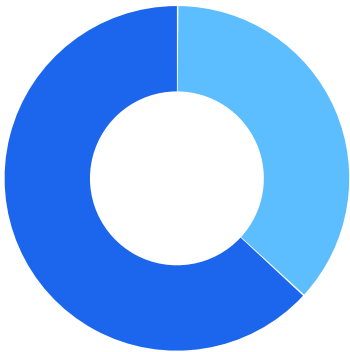


Occupation Race/Ethnicity Breakdown



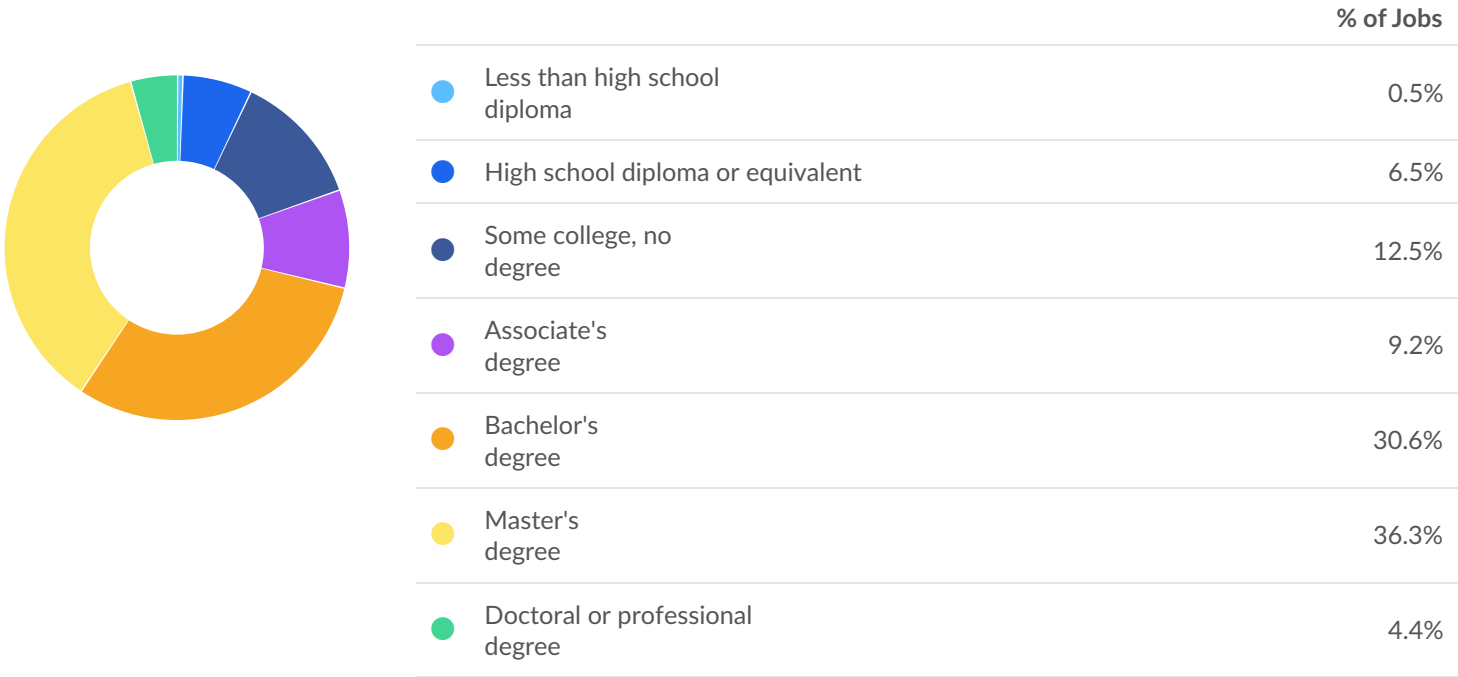
	% of Jobs	Jobs
White	85.8%	1,204
Black or African American	5.4%	75
Asian	3.3%	47
Hispanic or Latino	2.8%	39
Two or More Races	2.0%	28
American Indian or Alaska Native	0.7%	9
Native Hawaiian or Other Pacific Islander	0.1%	1

Occupation Gender Breakdown



	% of Jobs	Jobs
Males	36.8%	516
Females	63.2%	887

National Educational Attainment



Occupational Programs



0 Programs

Of the programs that can train for this job, 0 have produced completions in the last 5 years.



0 Completions (2023)

The completions from all regional institutions for all degree types.



197 Openings (2023)

The average number of openings for an occupation in the region is 757.

Not enough data to show the Top Programs section.

Not enough data to show the Top Schools section.

Appendix A

Health Information Technologists and Medical Registrars (SOC 29-9021):

Apply knowledge of healthcare and information systems to assist in the design, development, and continued modification and analysis of computerized healthcare systems. Abstract, collect, and analyze treatment and followup information of patients. May educate staff and assist in problem solving to promote the implementation of the healthcare information system. May design, develop, test, and implement databases with complete history, diagnosis, treatment, and health status to help monitor diseases. Excludes Medical Records Specialists (29-2072).

Sample of Reported Job Titles:

Medical Records Director
Medical Records Analyst
Cancer Registrar
Utilization Review Coordinator
Tumor Registrar
Severity of Illness Coordinator
ROI Specialist (Release of Information Specialist)
Public Health Registrar
Medical Record Consultant
Medical Data Analyst

Related O*NET Occupation:

Health Information Technologists and Medical Registrars (29-9021.00)

Appendix B - Data Sources and Calculations

Location Quotient

Location quotient (LQ) is a way of quantifying how concentrated a particular industry, cluster, occupation, or demographic group is in a region as compared to the nation. It can reveal what makes a particular region unique in comparison to the national average.

Occupation Data

Lightcast occupation employment data are based on final Lightcast industry data and final Lightcast staffing patterns. Wage estimates are based on Occupational Employment Statistics (QCEW and Non-QCEW Employees classes of worker) and the American Community Survey (Self-Employed and Extended Proprietors). Occupational wage estimates are also affected by county-level Lightcast earnings by industry.

Staffing Patterns Data

The staffing pattern data in this report are compiled from several sources using a specialized process. For QCEW and Non-QCEW Employees classes of worker, sources include Occupational Employment Statistics, the National Industry-Occupation Employment Matrix, and the American Community Survey. For the Self-Employed and Extended Proprietors classes of worker, the primary source is the American Community Survey, with a small amount of information from Occupational Employment Statistics.

Cost of Living Data

Lightcast's cost of living data is based on the Cost of Living Index published by the Council for Community and Economic Research (C2ER).

Lightcast Job Postings

Job postings are collected from various sources and processed/enriched to provide information such as standardized company name, occupation, skills, and geography.

Institution Data

The institution data in this report is taken directly from the national IPEDS database published by the U.S. Department of Education's National Center for Education Statistics.

Application Number.

17

Institution.

Minot State University

Applicant Name.

Krystal St. Peter

Applicant Title.

Department Chairperson

Applicant Department.

Department of Behavioral Sciences and Criminal Justice

Project Title.

Minot State University Master of Science in Substance Use and Mental Health Disorders Counseling Program

Briefly describe the proposed project.

Minot State University's Master of Science in Substance Use and Mental Health Disorders Counseling program is being developed in direct response to the shortage of qualified mental health and addiction professionals across North Dakota, particularly in rural, tribal, and underserved communities. What makes this program distinct is its integrated approach to dual licensure. Students will graduate eligible to pursue credentials as both Licensed Professional Counselors (LPC/LPCC) and Licensed Addiction Counselors (LAC), without needing to choose between tracks. The curriculum emphasizes real-world training in trauma-informed care, co-occurring disorders, rural mental health, Indigenous cultural competency, and work with justice-involved individuals. Students will complete supervised internships in a wide range of community settings, including mental health clinics, tribal health programs, correctional facilities, residential youth treatment centers, schools, and addiction treatment centers. These experiences help build strong ties with local agencies and prepare students to step directly into the workforce after graduation.

Faculty come from diverse disciplines including psychology, addiction studies, school psychology, social work, and criminal justice. While they represent different academic backgrounds, they come together to teach within a shared mission: to prepare students who are ethical, community-centered, and fully equipped for today's behavioral health field. The program offers both in-person and synchronous online learning, making it accessible to students throughout the state. To further support skill development, virtual reality technology will be used to simulate real counseling scenarios especially helpful for students in rural areas who may not have access to in-person lab training. With strong advisory board partnerships, alignment with North Dakota licensing boards and legislative priorities, and a focus on

community-informed education, this program is built to grow with the needs of the field. It is a sustainable, innovative response to one of the state's most urgent workforce challenges, and it reflects a long-term investment in the people and communities of North Dakota.

Does the proposal meet the statutory guidance of N.D.C.C. 15-10-75?

Yes

Indicate which statutory objective this proposal will advance (as required by N.D.C.C. 15-10-75).

Curriculum Development; Hiring and training of new and existing instructors

Briefly describe how the funds will advance the objectives.

A total of \$100,000 is being requested specifically for curriculum development to compensate for the time and effort the development team puts into the development of 15 new graduate-level courses. Each course will be created and reviewed to make sure it includes the specific knowledge, skills, and applied experience needed for dual licensure in both clinical mental health and addiction counseling. The curriculum will meet the expectations of our accrediting bodies as well as the standards set by North Dakota's licensing boards. We will also include a strong emphasis on applied skills, ethical practice, and client engagement, particularly in rural and underserved settings. The curriculum development team will also research and embed appropriate technology into the learning experience, integrating virtual reality scenarios and case-based simulations into coursework so students can practice their clinical skills in a safe, guided environment. These tools will help students who are learning remotely or who may not have immediate access to in-person lab opportunities.

While we are drawing on the strengths of existing faculty in psychology, social work, addiction studies, criminal justice, and school psychology, the size and scope of this program will require two additional full-time faculty lines; thus, we are requesting a total of \$250,000 for faculty salary and benefits for two new faculty members for the 2026-2027 academic year. These new positions will help us meet supervision and internship coordination requirements, provide consistent mentorship to students, and ensure we are fully compliant with accreditation and licensure expectations. Given the program's dual focus and the amount of hands-on training we plan to offer, additional faculty are not just helpful, they are necessary.

When will the proposed project be ready to admit students?

Fall 2026

Amount of funding requested.

\$350,000

What other sources of funding or resources support the proposed project?

In addition to the support provided through this grant, the project is strengthened by the people and systems already in place at Minot State University. One of the most valuable resources is the collaboration happening across the programs within the department. Faculty from psychology, addiction studies, school psychology, social work, and criminal justice are coming together with a shared commitment to build something that truly responds to the needs of North Dakota. Each brings their own experience, and together they're creating a program that is well-rounded, practical, and closely aligned with the realities of the behavioral mental health and addiction field. This type of interdisciplinary teamwork allows us to use existing strengths on campus while creating something entirely new for students and communities.

The university also offers a wide range of support services that will be available to students, no matter where they live. Students will have access to IT support for virtual learning, full library services including online databases and research help, and academic support like tutoring and writing assistance. The

Power Center will offer student success advising, and the Native American Cultural Center will continue its role in supporting Indigenous students through community, programming, and cultural connection. In addition, all students can access mental health services and disability support if needed. These services are already built to support both in-person and remote learners, which means students in rural or tribal communities can fully engage in the program while staying close to home. The systems are in place, whether a student is in Minot or attending from another part of the state. This shared commitment from faculty and the university as a whole helps ensure the program will not only succeed but continue to grow in ways that truly serve North Dakota.

Which identified workforce development need will this project address?

The U.S. Bureau of Labor Statistics anticipates the demand for substance use disorder and mental health counselors to increase by 18.8% over the next ten years. North Dakota is currently facing a critical shortage of licensed counselors, particularly in rural and tribal communities where behavioral health needs are growing. Many areas across the state do not have enough providers to meet current demand, let alone increased demand, and even fewer have access to counselors trained to address both mental health and addiction.

This gap creates a serious barrier to care. People living with co-occurring disorders often struggle to find providers who understand how to treat both issues at once. Most graduate programs ask students to choose between mental health or addiction counseling, which limits the readiness of new professionals entering the field. In rural settings especially, where one counselor may serve in many roles, this split approach does not reflect the reality on the ground.

This project directly responds to that need. Minot State University's new counseling program is built to prepare students for dual licensure in clinical mental health and addiction counseling. Rather than separating these paths, the curriculum is fully integrated to reflect what today's workforce requires. Graduates will be equipped to meet licensing standards for both Licensed Professional Counselor (LPC/LPCC) and Licensed Addiction Counselor (LAC), with real-world training in co-occurring care.

By strengthening the pipeline of counselors who are fully prepared to serve in complex roles across North Dakota, this program supports both workforce development and community well-being in a way that is deeply needed and long overdue.

What are the project's metrics for success? How will these metrics be achieved?

Immediate success for this project will be measured through university and state approval of the program, the hiring of new faculty, and initial student enrollment. By the end of Spring 2026, we aim to have secured final approval from the State Board of Higher Education and the university for the proposed program and curriculum with an anticipated start date of Fall 2026. Starting Fall 2025, a search committee will be tasked with interviewing and hiring two qualified tenure-track professors with the anticipated start date of Fall 2026. We anticipate having a cohort of 10 to 15 students in the first year of the program. Successful completion of these immediate goals will be assessed and reported in the final report due in November 2026.

Long-term success for this project will be measured through clear, achievable, and accountable outcomes tied to accreditation standards, workforce development goals, and student preparation. One key metric will be the program's ability to achieve and maintain accreditation in both clinical mental health counseling and addiction counseling. Accreditation ensures the program meets national standards for curriculum, supervision, faculty qualifications, and licensure alignment. Meeting these standards not only validates the quality of the program but also guarantees that students are eligible to pursue licensure upon graduation.

Another core metric will be the successful completion of internships and licensing exam eligibility.

Students will complete supervised internships in approved clinical and addiction settings, meeting North Dakota's standards for both LPC and LAC licensure. Program faculty will track student progress through coursework, internship completion, and licensure readiness to ensure students are on the path to employment.

Graduate employment rates will also be monitored, with the goal of placing students in behavioral health roles across the state – particularly in rural, tribal and underserved communities. We plan to collect follow-up data on graduate placement and retention to evaluate how well the program is contributing to the local workforce.

Additional success measures will include: Student enrollment and retention, graduate satisfaction and feedback, employer feedback on graduate preparation and performance, participation and engagement with advisory board members and internship partners. These metrics will be monitored through formal program review processes and regular input from students, faculty, and agency partners. Advisory board members will help identify any gaps, track changes in workforce demand, and guide adjustments to curriculum or internship opportunities as needed. The focus will remain on preparing students who are not only licensable, but truly ready to meet the needs of the communities they will serve.

How does the project support student retention in North Dakota to meet the needs of local industries?

This program addresses a clear need by giving students the chance to stay in North Dakota and continue their education in a meaningful way. Each year, students complete their undergraduate degrees at Minot State with the hope of becoming counselors, but without a graduate counseling program available here, they are left to search elsewhere. Once they leave, it becomes much less likely that they will return to work in the state. By offering a counseling master's program, we give those students a chance to stay connected to the communities they care about. The synchronous online format allows students to live and work in rural or tribal areas while completing their degree. This structure supports the kind of long-term investment that local industries and agencies need. Students can complete their internships in the same communities where they want to build their lives, which often leads to job opportunities and strong professional relationships. This program is also unique in North Dakota. While other master's programs in counseling exist, none offer a path to dual licensure in both mental health and addiction with strong focus in trauma informed care, rural mental health and indigenous culture. That added training makes our graduates more flexible and better prepared to meet the real needs of agencies across the state. Employers often need counselors who can serve in multiple roles, especially in smaller towns or underserved regions, and this program is designed to support that. In short, this project will keep skilled students learning, training, and working right here in North Dakota, while strengthening local partnerships and expanding access to quality care statewide.

How are the students supported by this project prepared to enter the workforce with minimal additional on-the-job training?

Graduates of this program will be prepared to begin work in the counseling field immediately after completing their degree. Students will meet all coursework and supervised internship requirements needed to sit for licensure as a Licensed Professional Counselor (LPC), and those who complete the addiction-focused internship will also be eligible to apply for Licensed Addiction Counselor (LAC) credentials. This dual preparation reduces the need for additional training after hire and gives employers access to professionals who are ready to take on complex roles. Internships will take place in settings that reflect the needs of North Dakota communities, including outpatient mental health clinics, addiction treatment centers, tribal and rural health programs, integrated care teams, residential facilities, correctional settings, and schools. These sites allow students to gain hands-on experience with diverse populations and build working relationships with agencies across the state.

The curriculum covers more than just clinical knowledge. Students receive training in trauma-informed

care, co-occurring disorders, rural behavioral health, and culturally responsive approaches for working with Indigenous populations and on reservations. In addition, the program includes a focus on justice-involved individuals – preparing students to work with people in the correctional system, as well as those reentering their communities and trying to rebuild their lives. These are often high-need populations with limited access to qualified, ethical support.

Students will learn widely used approaches such as diagnostic assessment with the DSM-5, treatment planning, motivational interviewing, relapse prevention, and ethical decision-making in small communities. These are the same tools and frameworks used across the state in real practice. Faculty bring professional experience from mental health, addiction, psychology, criminal justice, school psychology, and rural healthcare systems. Some are actively practicing clinicians, which keeps instruction grounded in the day-to-day work students will soon take on. With accreditation standards built into every part of the program, and both counseling and addiction components accredited by the appropriate national and state bodies, graduates will be fully prepared to enter the workforce across North Dakota with the training and qualifications needed to make an immediate impact.

Are there private sector partners in creating/offering the project?

While this program is housed at Minot State University, it is being developed hand-in-hand with professionals and agencies across North Dakota. These partnerships play a critical role in shaping the curriculum, but in supporting student training, mentorship, and long-term workforce placement. Students will complete supervised internships at a variety of sites, including private mental health clinics, addiction treatment programs, tribal health services, correctional facilities, school-based counseling programs, and residential treatment centers. These internships allow students to build skills in real-world settings and often lead directly to employment after graduation. Many of these agencies have already expressed interest in serving as internship sites and future employers.

Practicing clinicians from these same agencies will also be involved as adjunct faculty, bring their daily experience into the classroom and offering students practical, applied instruction that reflects what is truly needed in the field.

To maintain open communication with the field, the program will also establish an advisory board that includes professionals from across agency types and regions. This board will provide ongoing insight into workforce trends, help identify areas for growth, and ensure that the program continues to align with what communities and employers are seeing on the ground.

In addition to these embedded partnerships, the program will host both in-person and virtual job fairs. These events will not only allow students to connect with potential employers across the state, but will also include structured presentations from agency representatives. These speakers will share what their organizations do, who they serve, and what it's like to work within their setting. This gives students the chance to understand how counseling roles can vary between environments – such as child advocacy center, a human service center, a school, hospital, or youth correctional facility and helps them make more informed decisions about where they see themselves thriving.

These combined efforts reflect a shared investment in students' success. They also reinforce the program's larger purpose: to deliver well-prepared, well-ethically minded, supported, counselors who understand the communities they serve and are connected to the agencies that need them most.

Is this project offered in partnership with another NDUS institution?

At this time, this project is not formally offered in partnership with another NDUS institution. However, Minot State has a long-standing history of collaboration through articulation agreements and memorandums of understanding, particularly within our social work and addiction studies programs. These existing connections reflect our commitment to building shared pathways for students and

aligning educational efforts across the state. As this counseling program grows, we see strong potential for future partnerships with other NDUS institutions. Our focus is not competition – it's collaboration. The need for ethical, compassionate, and well-trained professionals in the fields of mental health and addiction continues to grow across North Dakota. To meet that need, we believe it's essential that institutions work together to support students and strengthen the workforce. Whether through shared field placement opportunities and classes, joint training efforts, or community-based initiatives, we are open and eager to explore ways we can partner in the future to meet this statewide goal.

Does this project support a program already approved per SBHE policies and NDUS procedures?

No

If not previously approved, is the project unique in the NDUS system?

While there are other counseling programs within the NDUS system, this is the only one designed to lead to dual licensure in both clinical mental health counseling and addiction counseling through one integrated program. This approach addresses a major workforce need across North Dakota. What sets this program apart even further is the depth of focus on real-world issues facing the state. The learning objectives emphasize clinical skills, addiction treatment, trauma-informed care, cultural competence with rural and Indigenous populations, and work with justice-involved individuals. These topics are not electives or specialty tracks. They are core to how the curriculum is built and delivered. The faculty team brings together professionals from psychology, addiction studies, social work, school psychology, and criminal justice. This interdisciplinary foundation offers students a broader perspective on counseling practice and prepares them to work across multiple systems. Students are trained not just in counseling techniques, but also in how to understand and navigate the complex challenges their future clients will face.

Describe how the project is novel and innovative.

This program is innovative in both its structure and its delivery. The synchronous online format allows students to attend live classes from wherever they are, including rural and tribal communities where access to graduate education has historically been limited. At the same time, students who are located in or near Minot will have the option to train in person on campus. This dual-access approach expands reach while maintaining the quality of real-time learning and support. To further strengthen training for students who are not able to attend in person, the program will incorporate virtual reality tools that simulate real-world counseling experiences. These tools will allow students to engage in guided scenarios and client interactions that mirror what they would experience in clinical settings. For students who cannot easily access in-person roleplays or group labs, this technology offers a meaningful, hands-on way to build practical skills.

The program will also include interactive case simulations and technology-based tools that support skill development in areas such as trauma-informed care, co-occurring disorders, ethical decision-making, and client engagement. These resources will be available to all students and will supplement their live internship experiences. The program will also include an advisory board made up of practicing professionals across North Dakota. Their insight will help ensure the training remains aligned with what agencies, communities, and clients need. This ongoing connection to the field allows the program to grow and evolve in real time, staying responsive and relevant to the changing demands of the workforce. Together, these features support a learning experience that is flexible, modern, and grounded in the realities of practice across the state of North Dakota.

How will the project be sustained after WEIF Grant funding is expended?

Once the program is developed, it will be sustained through student tuition and continued support from the academic department. The grant will help fund the creation of the curriculum, initial faculty hiring of

two faculty lines, and essential infrastructure. After that, the focus will shift to maintaining and updating the program rather than building it from the ground up. There is strong interest from students who want to stay in North Dakota for their graduate training, which supports long-term enrollment. The department will provide ongoing faculty and advising support, and community partners will continue to offer internship opportunities and serve as adjunct instructors. These partnerships help keep the program responsive to workforce needs while remaining financially stable.

How will the project adapt over time to changing workforce needs and technological changes?

This program is designed to grow and evolve alongside the fields of behavioral mental health and addiction. As an accredited counseling and addiction program, we are committed to meeting all standards set forth by the accrediting bodies. These standards are regularly updated to reflect national best practices, emerging workforce trends, and the evolving expectations of the counseling and addiction studies profession. This ensures our curriculum and program structure stay relevant and aligned with licensure requirements. Beyond accreditation, we will rely on a community-based advisory board made up of professionals from across North Dakota. These individuals will represent a wide range of practice settings – from tribal and rural agencies to addiction services, schools, hospitals, residential treatment, and corrections. Their lived insight will help inform curriculum changes, highlight gaps, and guide us in preparing students for the realities of the job market. We will also use regular feedback from alumni, field supervisors, employers, and current students to identify areas for improvement and growth. In addition to these internal sources, we will stay closely aligned with guidance from North Dakota’s professional licensing boards, as well as input from legislative and workforce committees involved in shaping behavioral health policy. This combination of voices ensures the program remains connected to both the daily realities of counseling and addiction work and the broader direction of behavioral health services across the state.

The program is also committed to keeping pace with technological changes in the profession. Students located in or near Minot will receive in-person training, while those attending remotely will benefit from virtual reality simulations that mirror real-world clinical scenarios. These tools offer valuable experience in client interaction, ethical decision-making, and trauma response, especially for students who may not have access to in-person labs. Students in person and remote will complete their internship in a live setting in the community. In addition, we will incorporate telehealth training, preparing students to confidently use the platforms and tools now common across mental health and addiction settings.

Faculty will participate in ongoing professional development, and many will continue practicing or consulting, keeping instruction grounded in current realities and trends of the field. As the Counselor Licensure Compact goes into effect, we will also prepare students to understand and navigate the legal and ethical responsibilities involved in practicing across state lines. This includes staying current with both North Dakota requirements and the standards of any other compact states they may be licensed in. Together, these efforts reflect a clear plan for adapting to change while staying committed to the program’s core goal: preparing ethical, compassionate, and well-trained counselors who are ready to meet the evolving needs of North Dakota’s communities.

June 27, 2025

Workforce Education Innovation Fund Grant Application

Institution: Minot State University

Project Title: Minot State University Master of Science in Substance Use and Mental Health Disorders Counseling Program

Question 25 Supporting Documentation: Letters of support are included from:

- Dakota Boys and Girls Ranch
- North Central Human Service Center



6301 19th Ave. N.W. | P.O. Box 5007 | Minot, ND 58702

701.852.3628 | 800.593.3098

June 22, 2025

Regarding: Workforce Education Innovation Grant

This letter is to express enthusiastic support for Minot State University's development of a new Master of Science in Clinical Mental Health Counseling and Addiction program. There is a profound and growing need for skilled professionals clinically trained in behavioral health. In addition, we cannot have a strong overall workforce without the mental health professionals to provide needed health care. This program would build workforce on both fronts.

Dakota Boys and Girls Ranch has provided residential treatment and education for youth since 1952. We are fully licensed and accredited as both a Psychiatric Residential Treatment Facility and a Qualified Residential Treatment Program, as well as Cognia-accredited in education. Since 2001, we have also operated two outpatient interdisciplinary mental health clinics, Dakota Family Services, providing psychiatry, psychology and therapy services to the broader community. As such, we work with individuals across the lifespan in outpatient care. In residential the youth are navigating complex challenges, adolescents who have experienced trauma, mental health struggles, justice system involvement, and placement instability, while their families have multiple, layered issues.

The opportunity to support a graduate program that integrates trauma-informed practice, addiction education, rural and Indigenous mental health, and justice-system insight into every course is not only timely — it's essential. The greatest challenge facing those with mental health needs in our society today is access to well-trained, effective providers.

We understand that student internships may be a future component of this program. We currently host interns from several graduate programs in a variety of disciplines. Our level of involvement would depend on capacity, timing, and alignment with agency needs, but the possibility is high. At this stage, we are open to continued conversation about how collaboration might look in the future. We also appreciate that the program will meet both national and state accreditation standards, with student supervision built into its structure. We appreciate that the proposed program acknowledges that flexibility is key to any successful partnership.

We applaud Minot State University's commitment to strengthening North Dakota's behavioral health workforce and are glad to serve as a voice of support in that effort.

Sincerely,
Joy Ryan
President/CEO
j.ryan@dakotaranch.org

The mission of Dakota Boys and Girls Ranch is to help at-risk children and their families succeed in the name of Christ.

Workforce Education Innovation Grant Committee,

I am writing to express strong support for the development of a dual licensure program in Mental Health Counseling and Addiction Counseling at Minot State University (MSU). As a representative of North Central Human Service Center, and a committed partner in advancing mental health services across our region, I believe this program will meet a critical workforce need and significantly enhance the quality and accessibility of behavioral health care throughout North Dakota.

We are aware that the program offers the opportunity for students to pursue licensure as a Licensed Professional Counselor (LPC/LPCC), and if they choose, complete additional internship that would also meet requirements for Licensed Addiction Counselor (LAC/LMAC) credentials. The fact that addiction content will be embedded into all courses, regardless of a student's licensure path, reflects a strong commitment to preparing graduates for the needs of the field.

The interdisciplinary faculty team—from psychology, school psychology, social work, addiction studies, and criminal justice—makes this program especially unique. Their collective experience offers students a broad understanding of systems and populations, including those involved in or transitioning out of the justice system. MSU's approach to interdisciplinary training is consistent with the approach we take to client care at NCHSC. We employ Psychologists, Counselors, Skills Trainers, Case Managers, Psychiatrists and Direct Care who work alongside one another to provide a full array of services.

We also support the program's focus on rural mental health, trauma-informed care, and Indigenous cultural understanding. These are areas of significant need in North Dakota, and we recognize the importance of developing counselors who are both clinically prepared and culturally aware.

While we understand that student internships may be a future component of this program, our level of involvement would depend on capacity, timing, and alignment with agency needs. At this stage, we are simply expressing openness to continued conversation about how collaboration might look in the future. We also appreciate that the program will meet both national and state accreditation standards, with student supervision built into its structure.

We support Minot State University's efforts to secure grant funding to help launch this program and are confident it will contribute meaningfully to addressing mental health and addiction needs across our region.

Sincerely,



John Butgereit, LPCC

Regional Director

701-857-8535 | jbutgereit@nd.gov



2025-2027 Application for Workforce

Education Innovation Grant Funds

Application Number.

18

Institution.

Minot State University

Applicant Name.

Bryan Schmidt and Darren Seifert

Applicant Title.

Department Chairpersons

Applicant Department.

Department of Science; Department of Math, Data, and Technology

Project Title.

Meeting Workforce Needs in Western North Dakota: Innovation Engineering at Minot State University

Briefly describe the proposed project.

Primary sector businesses are vital to Western North Dakota's (WND) economy, creating a new wealth via skilled labor and knowledge. Discussions with businesses in WND indicated unmet needs for technically skilled graduates, particularly in engineering. Potential employment for graduates includes energy, agriculture/food processing, logistics, and defense-related industries. Our contacts expressed a strong need for relevant WND educational offerings to retain graduates in the region. Targeted skills include troubleshooting of complex systems, self-directed learning, and effective workplace communication.

The proposed Innovation Engineering curriculum does this by providing a robust, flexible degree program that incorporates direct preparation for existing opportunities, along with the breadth to innovate, reskill, and pivot in our dynamic economy. Our program (details in Qu25 Uploaded docs) has been designed to maintain student interest, support their success and connection to WND, and retain students to completion via various pathways. The program's flexibility complements the cyclicity of our industries, by fostering innovators who will identify new and emergent business opportunities and diversify the economy in ND.

Our curriculum addresses many factors that cause students to drop out of challenging academic programs like engineering. We plan to partner with software company (Codio) to develop novel, all-encompassing AI-powered student support environments. The program will build a better prepared workforce to meet the needs of companies in WND and provide innovators to expand the economic base of the area.

The program offers a robust, flexible path to an MiSU 4-year B.S. in Innovation Engineering. Its core is a 2-year A.A. in University Studies with an Engineering concentration, comprising four fundamental

engineering micro-credentials: Structures, Machines, Materials, and Circuits. This A.A. provides a solid foundation for those who transfer to another NDUS engineering program, and also allows flexibility for those with a technical A.A. to easily upskill to an engineering degree.

The curriculum engages students in engineering from the beginning. It eliminates prerequisite by embedding prerequisites and block-scheduling with concurrent support courses. We all re-brand general education courses as essential workplace skill builders, linking them to their development as working professionals. A backbone of First-Year Experience, E-Studio, and research courses within the A.A. degree helps students establish professional engineering identities, explore industry careers, access mentoring, and fosters persistence and completion within a learning community. Summer employment, internships, and co-op positions address employer's short-term/peak staffing needs while providing students with valuable work experience and income to reduce debt.

In program years 3 and 4, students choose coursework in 2 to 3 engineering micro-credentials from a broad selection, developed in conjunction with regional industries. These are complemented by a 15-credit capstone sequence that offers relevant hands-on experiential learning directly with those industries.

Successful implementation of the program will be ensured through the hiring of a Workforce Development Officer (WDO). As part of their role in program promotion, the WDO will work extensively with local high schools and to integrate with CTE programs. The WDO will also maintain relationships with industry leaders to ensure the program continues to meet the needs of WND industries and coordinate curricular updates.

The Bridge to Engineering course will feature hands-on activities, virtual job shadows, professional interviews, career mentoring, and an engineering discipline survey. This course's flexible delivery (summer bridge/camp, on-campus, online for working adults, or dual credit) aims to reach a broad spectrum of potential future engineers.

Does the proposal meet the statutory guidance of N.D.C.C. 15-10-75?

Yes

Indicate which statutory objective this proposal will advance (as required by N.D.C.C. 15-10-75).

Enhancement of postsecondary partnerships with primary and secondary schools; Education program promotion; Hiring and training new and existing instructors; Equipment & technology purchases; Curriculum Development

Briefly describe how the funds will advance the objectives.

Approximately \$150,000 will be allocated to curriculum development, directly supporting the objective of State Board of Higher Education (SBHE) and MiSU approval of the program and its courses by Spring 2026. This funding will compensate the development team and provide resources for faculty to modify existing courses, ensuring the creation of a cohesive, micro-credentialed curriculum, including significant outreach to companies for advanced specialization development.

A sum of \$125,000 is earmarked for the hiring of a qualified tenure-track Engineering Professor by Spring 2026, commencing employment in academic year (AY) 2026-27.

\$125,000 will be dedicated to program promotion by hiring a workforce development officer (WDO) during AY 2025-2026 to facilitate the objective of executing a comprehensive outreach strategy, aiming for a minimum of 15 distinct outreach activities annually and attracting 5-10 initial students in the Fall 2026 cohort. These funds will support marketing, recruitment efforts, and intensified interactions with 299

both local industries and local high schools and CTE programs. A model for this position would be the school-to-work professional in the Bismarck area and would come with the expectation of securing ongoing funding either through industry partners or grant opportunities to sustainably fund this position after their first year.

A targeted \$10,000 will enhance postsecondary partnerships with K-12 schools, specifically aimed at CTE coursework development. This modest investment supports the broader objective of fostering early engagement and preparing students for engineering pathways and leveraging collaborations with the Minot School CTE center.

Finally, \$440,000 is designated for equipment and technology purchases, a sustainable investment will directly support the objective of phased equipment acquisition and the establishment of AI-enhanced learning environments. This includes \$150,000 to make AI-supported versions of classes in partnership with Codio, and \$215,000 to procure essential equipment for course laboratories, ensuring students gain hands-on experience with industry-standard tools.

Leveraging the recent legislative appropriation (SB2003) to renovate and update academic facilities, additional funding of \$75,000 (as part of the \$440,000) is needed to support repurposing of existing underutilized space to form a learning community hub, peer support nexus, and showcase to support outreach efforts. The E-Studio classroom/lab environment supports both on-campus and remote students. Furnishings and teleconferencing equipment are needed to provide a collaborative teamwork environment, including engineering makerspace equipment including 3-D printers, computers, simulators, prototyping and fabrication equipment, and engineering modeling and visualization software. In the E-Studio, students will be able to complete outreach-related and community-based projects, practicing engineering design in a real-world problem-based environment.

When will the proposed project be ready to admit students?

Fall 2026

Amount of funding requested.

\$850,000

What other sources of funding or resources support the proposed project?

1. EPSCoR – E-CORE federal grant (awaiting final federal approval for disbursement): A federal grant, E-SPARK, secures approximately \$120,000 annually directly for MiSU for the next four years. This funding primarily aims to increase opportunities for positive STEM interactions among middle and high school (M-12) students, teachers, undergraduate students, and faculty through activities such as “Scientist in the Classroom,” “Research Shadow,” and “Research Experiences for High School Students.” E-SPARK also supports STEM literacy by funding undergraduate research experiences, supporting solving open-ended questions, using patient and persistent problem-solving skills. A portion of these resources will be strategically utilized to facilitate outreach to M-12 schools, raising awareness about the new Innovation Engineering program and highlighting local industry-specific opportunities and career paths.
2. Leveraged NDUS Resources: This program significantly leverages existing MiSU institutional resources by utilizing the mathematics, physics, computer science, and chemistry courses already offered at the university for the first two years of the curriculum. This approach minimizes the need for extensive new course development in the foundational phase. Furthermore, the advanced specialization micro-credentials in the latter half of the program will incorporate courses already taught at other institutions, such as Bismarck State College (BSC), to provide specialized content efficiently. This could be facilitated via expansion of the existing Northern Information Technology

Consortium (NITC) Joint Program Agreement, which allows participating institutions to collaborate on the exchange and delivery of courses and degree programs.

An articulation agreement is already being discussed with BSC and articulation agreements with engineering programs at UND and NDSU will be vigorously pursued, ensuring students are well prepared and will receive appropriate credit for their previous work in the MiSU Innovation Engineering program.

3. **Industry Partnerships:** We anticipate in-kind and financial support from local and regional industries. We have engaged in dialog with businesses in Western North Dakota, and they have indicated their willingness to provide support with some of the industry-specific programming and curriculum development for the advanced specialization micro-credentials. This collaboration will be crucial for ensuring that the curriculum remains highly relevant to current workforce needs and provides students with practical, in-demand skills. Exposure to working professionals supports mentoring and engagement of students, encouraging persistence and completion, and ultimately employment in the area.

Which identified workforce development need will this project address?

The program strategically addresses several key recommendations from the North Dakota Workforce Development Council's Report of Recommendations (December 2024):

1. **Enhancing On-the-Job Training and Experience:** The program aligns with Recommendation #1 by integrating extensive hands-on learning, including internships, research experiences, and co-operative opportunities within its 15-credit capstone sequence. This directly supports the report's call for "student learner on-the-job training opportunities."
2. **Supporting Apprenticeship Goals:** By offering "bite-sized" micro-credentials and integrating Career Technical Education (CTE) courses like "Fabrication" the program complements Recommendation #2's focus on expanding quality pre-apprenticeship programs and practical skill development.
3. **Attracting and Retaining Talent:** The program directly contributes to Recommendation #3 by strategically fostering local ties. The program's articulation pathway and emphasis on early engagement with regional industries through "E-Studios" and initial internships increase the likelihood that students will remain in or return to North Dakota after graduation.
4. **Preparing for AI Adoption:** While Recommendation #6 focuses on employer-led AI solutions, the program supports this by preparing an AI-literate workforce. The program incorporates customized AI course environments and use of AI related tools throughout the program.

The program's structure, with its foundational micro-credentials and advanced specializations, prepares students for various engineering and related roles identified in the North Dakota In-Demand Occupations List. The initial "Fundamental" micro-credentials directly align with several listed in-demand engineering occupations. The program focus on industry-collaborated advanced micro-credentials directly targets specific, evolving needs within the state's workforce.

In summary, the program is strategically designed to produce a well-rounded, locally connected engineering workforce with a mix of functional, soft, and technical skills that North Dakota employers are actively seeking, while simultaneously addressing the challenge of worker attraction, as outline in the North Dakota Workforce Ecosystem Assessment report (June 10, 2025).

What are the project's metrics for success? How will these metrics be achieved?

Key metrics include curriculum, outreach, enrollment, staffing, equipment and infrastructure.

1. Curriculum Development & Approval

Metric: Full SBHE and MiSU approval of the program and all associated core courses by the end of Spring 2026, enabling program launch in Fall 2026.

How Achieved: The program development team (Professors Schmidt, Seifert, McCarville, Erisman, & George) will work with faculty during Summer and Fall of 2025 to develop the first 2 years of programming in detail, and shepherd the program through the approval process. For the industry-focused micro-credentials, we will conduct at least 6 targeted outreach meetings with local/regional companies by Spring 2026 to gather input and secure their commitment for curriculum co-development. Draft curricula for initial advanced micro-credentials will be developed and reviewed with industry partners by Spring 2027.

2. Program Outreach and Recruitment

Metric: Execution of a comprehensive outreach strategy resulting in a minimum of 10 distinct outreach activities annually (e.g., high school visits, career fairs, summer camps, presentations at community colleges) through AY 2025-26 and AY 2026-27.

How Achieved: A dedicated recruitment plan will be developed by Fall 2025. This plan will utilize existing university recruitment channels, new program-specific marketing materials, and active participation in local and regional STEM events. The Bridge to Engineering course will be promoted as a dual-enrollment, summer bridge, and campus-wide recruitment tool. Collaboration with M-12 schools will focus on showcasing engineering careers and unique aspects of this program. These activities will be initiated and maintained by the WDO.

3. Initial Student Enrollment

Metric: Enroll 5-10 new students into the Innovation Engineering program in its inaugural Fall 2026 cohort.

How Achieved: This target will be met via outreach, personalized follow-up, and highlighting the program's unique micro-credentialing, practical focus, and clear articulation pathways. Early engagement through the Bridge to Engineering course and strong advisement will be critical. This goal is achievable, as 4 students self-identified with interest in engineering in Fall 2024.

4. Staffing

Metric: Successful search and hiring of a WDO to start Spring 2026 and a tenure-track Engineering Professor to start AY 2026-27.

How Achieved: A search committee will be established by Fall 2025 to initiate a national search for both positions. The faculty position description will emphasize commitment to innovative pedagogy and relevant North Dakota industry focused research. The WDO position description will emphasize the ability to foster industry-academia partnerships and strong program promotion/marketing skills.

How does the project support student retention in North Dakota to meet the needs of local industries?

Breaking from traditional models, our Innovative Engineering program provides a novel framework to effectively cultivate the specific, varied engineering talent required by Western North Dakota's (WND) industries, despite the challenge of low individual demand for each specialty. We achieve this by: 1) **Direct Industry Engagement & Advanced Specialization:** Students pursuing the 4-year B.S. in Innovation Engineering will gain critical problem-solving skills and on-the-job experience through integrated experiential learning directly with industry partners in their third and fourth years. This includes a 15-credit capstone sequence focused on industry projects and specialized engineering micro-credentials³⁰²

chosen from a broad selection, all developed in collaboration with regional industries. These direct industry connections increase the likelihood of graduate retention in the region by explicitly meeting local industry needs and fostering strong professional ties. The WDO will be responsible for maintaining these industry connections, ensuring programming reflects current industry needs. 2) Cultivating Early Local Ties: During the first two years of the program, students complete foundational micro-credentials locally. Dedicated “E-Studio” courses and structured opportunities for early internships or research experiences will foster significant engagement and relationship-building with local companies. This direct exposure cultivates strong connections between students and WND industries. Even if students transfer to a larger university within the NDUS for more traditional advanced specializations, these vital local ties can be maintained, significantly increasing the likelihood that graduates will return to the area to fulfill specific engineering demands of the local industries. 3) Flexible Local Specialization: Due to the program’s unique micro-credentialing structure, we offer the flexibility to meet both diverse industry needs and individual student interests. For students whose interests align with MiSU’s advanced micro-credentials offered, they can remain at MiSU to complete their entire Innovation Engineering degree, providing a highly tailored education that directly addresses local industry requirements, with those requirements regularly updated by the WDO.

How are the students supported by this project prepared to enter the workforce with minimal additional on-the-job training?

Our program prepares students for the workforce with reduced additional on-the-job training through the following:

1. Hands-on, Application-Focused Learning

- i. Embedded prerequisites in which essential foundational knowledge is taught directly within engineering contexts, immediately demonstrating its real-world application.
- ii. E-Studio learning communities which foster design and professional skills, including industry site visits, familiarizing students with actual workplaces and skills.
- iii. Hands-on CTE integration with courses like “Fabrication” in the Fundamentals of Materials micro credential provide direct, practical skills. Integration with CTE will be kept up to date and relevant by a WDO.
- iv. Research or practice experiences as part of the degree which give students direct experience in industry operations and solving real on-the-job problems before graduating and becoming employed in those industries.

2. Early and Sustained Industry Engagement

- i. Professional mentoring where the Bridge to Engineering course connects students with engineering professionals, offering insights into industry expectations and valuable skills.
- ii. Internship and research preparation through the E-Studio courses that prepare students for real-world internships or research experiences, building practical experience and industry understanding.
- iii. Industry-collaborative specializations where advanced micro-credentials are developed with input from regional industries, ensuring the curriculum directly aligns with current and future workforce needs. Those workforce needs will be kept up to date via a WDO.
- iv. A robust research or practice capstone sequence with experiential learning provides an intensive, culminating experience. The deep immersion in real-world projects directly applies learned skills, develops problem-solving abilities, and familiarizes students with industry-

specific processes and challenges.

3. Practical Skill Development and Professionalization

- i. AI-simulated job interviews introduced in the Bridge to Engineering course help students identify and understand skills valued by employers, preparing them for professional transitions.
- ii. Cross-cutting themes supported throughout the program with an emphasis on design, problem-solving, and professionalization develops adaptable engineers ready for workplace challenges.

Are there private sector partners in creating/offering the project?

Private sector partners are integral to the creation and ongoing success of the Innovation Engineering program. The importance of these partnerships is highlighted by the need for the WDO position, who will be responsible for maintaining these critical partnerships. The private sector partners will contribute in three significant ways:

1. Local and regional industry partners: Local and regional industries are foundational partners, contributing substantially to the program's relevance and responsiveness. To date, we have already received letters of support from two local companies and the Minot Area Chamber Economic Development Corporation endorsing the Innovation Engineering program and its collaborative model. Industry contributions manifest in several critical areas:
 - i. Advanced Specialization Micro-credential Development. Industry experts will collaborate directly with faculty to co-design and develop the curriculum for the advanced specialization micro-credentials. This direct input ensures that the skills taught are precisely aligned with current and future workforce demands.
 - ii. Business and Industry Leadership Team (BILT) Formation. A dedicated Business and Industry Leadership Team (BILT), composed of leaders from various local and regional industries, will be established. This team will serve as a crucial forum for ongoing dialogue, allowing the university to gain insights into the evolving technological and workforce needs of the region. This foresight will enable the program to proactively adapt its offerings, ensuring long-term relevance.
 - iii. Program Advisory Boards. Industry professionals will actively participate in program advisory boards. These boards will provide invaluable feedback on the effectiveness of existing programming, identify areas for modification or expansion, and ensure the curriculum remains dynamic and effectively prepares students for real-world engineering challenges. This continuous feedback loop is vital for maintaining the program's cutting-edge nature.
 - iv. Equipment and Resource Donations. Beyond curriculum development, we anticipate that local industries may be willing to contribute donations, equipment, machinery, or materials that are relevant to engineering applications. These contributions would expose students to real-world industrial tools and augment the program's laboratory capabilities.
2. An Educational Software Company Partner. Our partnership with Codio, a leading educational software company, is critical for integrating state-of-the-art pedagogical into the curriculum. Codio will provide the platform and expertise to implement specialized generative AI-supported learning environments. These environments will be customized to assist both students and faculty in navigating the challenging engineering curriculum by offering personalized learning pathways, adaptive assessments, and immediate, intelligent feedback, thereby enhancing student comprehension and engagement.

3. **Equipment and Software Vendors.** To ensure students train on industry-standard tools and technologies, we will actively seek additional partnerships with leading engineering equipment and software vendors. These partnerships are anticipated to yield significant in-kind contributions, such as donated or deeply discounted software licenses (e.g., CAD, simulation, PLC programming software), and potentially donations of specialized laboratory equipment (e.g., robotics kits). These contributions are important for equipping our course laboratory and E-Studio courses, providing students with direct, hands-on experience that mirrors professional engineering environments.

Is this project offered in partnership with another NDUS institution?

This project is designed with robust partnerships across the university system, strategically leveraging the strengths of various institutions to enhance the program's offerings and create diverse completion pathways for students within North Dakota. We envision collaboration with two primary types of institutions within the state university system, and a third with local vocational education programs.

1. **NDUS community colleges.** We intend to forge strong partnerships with community colleges, particularly those with well-established applied technology and technical programs, such as BSC.

Contributions: Firstly, community colleges can contribute valuable applied coursework to our advanced specialization micro-credentials. Community colleges excel in delivering hands-on practical training in areas highly relevant to the specialized micro-credentials (e.g. automation), which can seamlessly integrate into our curriculum. Secondly, we will work to establish formal articulation agreements between our Innovation Engineering program and community college programs. This will create clear and efficient pathways for community college graduates to seamlessly transfer between the programs. Conversations with BSC are already underway.

2. **NDUS research institutions with traditional engineering programs.** Collaborations with NDSU and UND are crucial for providing more traditional but diverse options for our students.

Contributions: The primary contribution here will be the development of articulation agreements for students who choose to transfer after completing the foundation two years of our program. This establishes a clear "2+2 articulation pathway," enabling our students to transition smoothly into a more specialized, traditional engineering degree at these institutions. This partnership ensures that students have the flexibility to pursue either our industry-focused Innovation Engineering degree or a more traditional engineering degree based on their evolving career aspirations.

3. **Local Career and Technical Education (CTE) Center (High School Level):** We also envision developing a partnership with the local CTE center located in the Minot public school system, as well as those located in surrounding Western North Dakota Communities.

Contributions: These collaborations will focus on delivering CTE-relevant coursework that complements our foundational micro-credentials, particularly in areas like Fabrication within the Fundamentals of Materials micro-credential. By working with the CTE centers, we can leverage their specialized facilities, equipment, and instructors to provide high-quality, hands-on technical training to our students. The WDO will help facilitate and maintain this partnership.

Does this project support a program already approved per SBHE policies and NDUS procedures?

No

If not previously approved, is the project unique in the NDUS system?

The Innovation Engineering program stands out as a unique offering within the NDUS system, primarily due to its innovative academic structure and strong industry integration. While other institutions in the state offer traditional engineering programs, this proposed project departs significantly from the historic

academic model in the following ways.

Firstly, its micro-credentialing approach sets it apart from conventional four-year engineering degrees. By breaking down the curriculum into “bite-sized” fundamental and advanced micro-credentials, the program offers a novel pathway for students to gain specialized skills and receive tangible recognition of their progress. This agile structure allows for greater flexibility and responsiveness to evolving industry needs compared to more rigid, historically defined engineering disciplines.

Secondly, the program’s comprehensive articulation and transfer pathways with both two-year and four-year colleges are distinctive. The design explicitly supports a 2+2 articulation pathway, allowing students to seamlessly transfer after completing the foundational two years. Furthermore, the program is designed to potentially leverage coursework from two-year institutions, such as Bismarck State College (BSC), for its advanced specialization micro-credentials. This integrated approach to collaboration across different types of higher education institutions is uncommon and aims to broaden access to engineering and technical education across the state.

Finally, the program’s direct and deep ties with local industry through the development of advanced specialization micro-credentials represent a significant point of uniqueness. Unlike traditional programs that might focus heavily on ABET accreditation, this program’s strategic decision not to directly seek ABET accreditation from its inception provides considerable flexibility. This allows the curriculum to be exceptionally responsive to the immediate and evolving needs of local industries in Western North Dakota. By co-developing these specialized micro-credentials with industry partners, the program can rapidly adapt to technological advancements and workforce demands, ensuring graduates possess highly relevant and in-demand skills, thereby directly addressing regional economic development priorities. Importantly, while graduates from ABET-accredited programs typically require four years of professional experience to become a licensed Professional Engineer (PE), graduates of this Innovation Engineering program can still pursue PE certification after accumulating eight year of workforce experience. This pathway ensures that the absence of initial ABET accreditation is not professionally restrictive for students seeking licensure in the future, providing a viable and flexible route to career advancement. This agility in curriculum development, driven by direct industry input, distinguishes it from existing offerings.

Describe how the project is novel and innovative.

1. **Micro-credentials:** Instead of a traditional monolithic degree, the program breaks down engineering education into smaller, stackable micro-credentials. The “bite-sized” approach offers tangible recognition of progress, potentially boosting student motivation and retention. It also allows for greater flexibility and customization in learning paths.
2. **Embedded prerequisites:** The pedagogical innovation of integrating essential prerequisites directly within core engineering courses is highly novel. By introducing supporting material (math, physics, chemistry) within the engineering context before students complete dedicated supporting courses, the program aims to immediately demonstrate relevance and overcome the common student challenge of disconnected foundational coursework. This also provides multiple opportunities for skill reinforcement.
3. **AI-Enhanced learning environments:** The plan to leverage generative AI systems for student placement, personalized learning, and assessment is a cutting-edge approach. This can significantly enhance the learning experience by tailoring content to individual student needs and providing dynamic feedback. This personalized and adaptive support will be particularly beneficial for students who may initially struggle with the mathematical and technical nature of the material but are very interested in becoming an engineer.

4. The Bridge to Engineering course: This course is innovative in its proactive approach to student engagement and retention, specifically by focusing on helping students explore their interests and develop a personalized academic plan. The inclusion of AI-simulated job interviews and mentoring from engineering professionals provides a practical, real-world context early in the curriculum. Its dual-enrollment and summer bridge options also demonstrate a novel strategy for recruitment and preparation.
5. Integrated E-Studio learning communities: The E-Studio courses, serving as dedicated learning communities that foster cross-cutting themes, industry site visits, and internship preparation, go beyond traditional lab or recitation sessions. These courses involve problem solving in context, by engaging students in the engineering process through addressing community-based situations and issues. The courses are designed to emphasize holistic development and professionalization from the start, providing enhanced opportunities for peer-based support that reinforces both academic learning and professional growth.
6. Industry-Responsive Specializations: The commitment to developing advanced specialization micro-credentials in close collaboration with regional industries ensures the curriculum remains highly relevant to current workforce needs. This agile response to industry demands is crucial for maintaining program efficacy.

How will the project be sustained after WEIF Grant funding is expended?

It is anticipated sustainability will require a multi-faceted approach involving the following:

1. Enrollment: The primary mechanism for sustainability will be tuition revenue generated from a robust student enrollment. The program's innovative features (micro-credentials, AI integration, industry relevance, flexible pathways) should attract a consistent student body.
2. Industry Partnerships and Sponsorships: These partnerships and sponsorships will be developed and maintained by the WDO. The WDO position will be expected to generate external funding that supports that position and strengthens the program after the expiration of the WEIF funding. The WDO will direct these sustaining efforts, focusing initially on the following key areas and adapting as new opportunities arise:
 - i. Direct Industry Funding: As the program develops specialized micro-credentials in collaboration with industry, MiSU can explore opportunities for direct industry sponsorships or endowments for specific labs, faculty positions, or scholarships related to these specializations.
 - ii. Corporate Training Programs: The "bite-sized" micro-credentials are highly adaptable for corporate employee upskilling and reskilling programs. Offering these micro-credentials to industry professionals may also enhance program enrollments.
 - iii. Research Grants and Contracts: The 15-credit capstone sequence, with its focus on research and/or practice, will be aligned with industry-sponsored smaller research projects or consulting contracts, possibly bringing in external funding.
 - iv. Alumni Engagement and Philanthropy: The WDO will actively cultivate engagement with current MiSU alumni who are working or have had successful careers in local and regional industries. Their vested interest in supporting their alma mater and contributing to the development of the future workforce in their sector makes them prime candidates for future philanthropic contributions and ongoing support for the program's initiatives, including student scholarships, program enhancements, and equipment donations.
3. State and Federal Funding beyond the initial WEIF grant period: The university can continuously seek

additional state and federal grants that align with the program's objectives, particularly those focused on workforce development, STEM education, and innovative pedagogical approaches.

4. **Develop Articulation Agreements:** The 2+2 articulation pathways with both community colleges and the research-intensive universities should be formalized with various institutions to ensure a steady stream of transfer students, solidifying enrollment numbers.

How will the project adapt over time to changing workforce needs and technological changes?

The program is inherently designed for adaptability, with several built-in mechanisms to respond to evolving workforce needs and technological advancements.

1. **Micro-credential Modularity and Agility:** The most significant adaptive mechanism is the modular nature of the micro-credentials which can be updated, modified, or entirely new ones can be developed and introduced much more rapidly in response to emerging industry trends and technological shifts. If a new technology becomes critical (e.g., quantum computing in engineering), a specific micro-credential can be created or an existing one updated without overhauling the entire degree.
2. **Industry Collaboration for Specialization Development:** The advanced specialization micro-credentials will be developed in close collaboration with industries in the region. This direct and continuous feedback loop with employers ensures the curriculum remains relevant and produces graduates with skills immediately applicable to the current job market. The industry advisory boards and BILT will be critical in this process.
3. **Flexible Capstone Sequence (Research and/or Practice Focused):** The 15-credit capstone sequence can adapt to new needs by focusing on emerging research areas or practical problems directly relevant to new technologies or workforce demands. This allows for dynamic project work that reflects the leading edge of engineering practice.
4. **AI-Enhanced Curriculum and Pedagogy:** The use of customized AI course environments is not just a tool but a fundamental aspect of the program's adaptability. AI can be used to identify emerging skill demands and inform curriculum adjustments, personalized learning paths, rapid content updates to facilitate the creation and updating of course materials to reflect new technologies or industry standards.
5. **Adaptive Program Design:** The program's inherent flexibility for continuous adaptation to changing workforce needs and technological advancements. This is achieved through a process of ongoing program review and assessment driven by input from industry stakeholders, alumni, and current students. This feedback directly informs curriculum modifications and the development of new specialization micro-credentials. Crucially, sustained faculty professional development, including industry engagements and training in emerging technologies, ensures that instruction remains cutting-edge. Furthermore, the consistent integration of essential workplace skills (EWS) provides graduates with broad, transferable competencies that remain relevant across evolving technical landscapes.

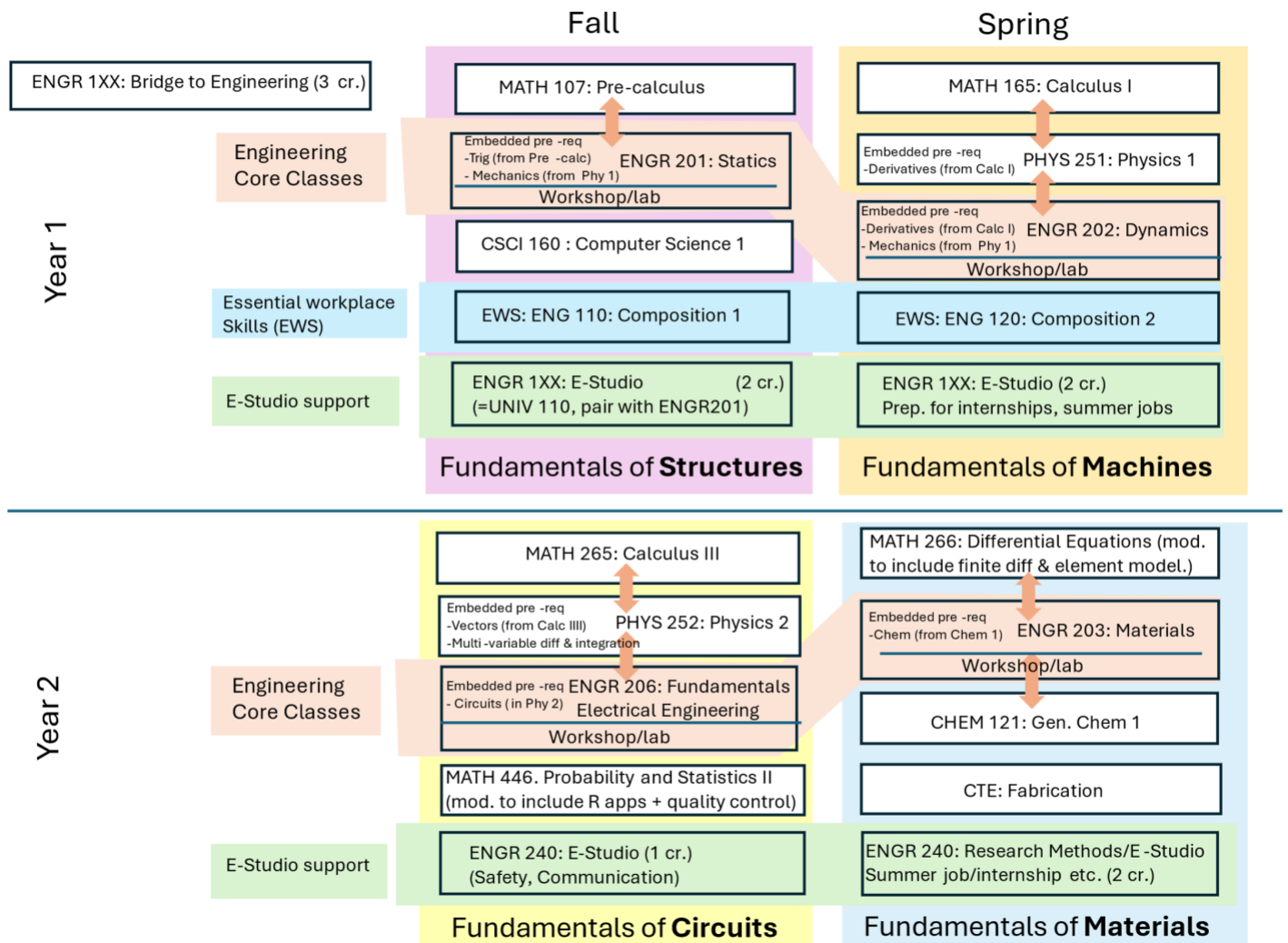
The Workforce Development Officer (WDO) will play an important role in these adaptive efforts by facilitating industry collaborations for specialization development, contributing to the agile adaptation of micro-credentials, and supporting the continuous program review and assessment processes to ensure ongoing relevance to workforce needs.

Innovation Engineering at Minot State University - Program Description



This innovative program is structured around a unique micro-credentialing approach (i.e. bite-sized), designed to enhance student engagement, retention, and practical skill development. The program is divided into two halves, with the initial two years focusing on foundational engineering principles through four distinct "fundamental" micro-credentials: Fundamentals of Structures, Fundamentals of Machines, Fundamentals of Circuits, and Fundamentals of Materials. The latter two years are dedicated to advanced specialization, where students complete a 15-credit capstone sequence and pursue additional industry-focused engineering micro-credentials. Visual overviews of the coursework for each half of the program are shown prior to their description.

Years 1 and 2



Each of the Fundamentals micro-credentials is delivered in a block schedule over a single semester, comprehensively covering essential engineering and supporting coursework. A consistent structure supports each micro-credential: a core engineering course (e.g., Engineering Statics, Engineering Dynamics, Engineering Circuits, Engineering Materials) is paired with relevant mathematics and basic science courses. Integral to each block is an "E-Studio" (Engineering Studio) course, which serves as a learning community. These E-Studio courses foster cross-cutting themes such as design and professionalization, including industry site visits, and in the second year, they pivot to preparing students for internships or research experiences.

The feasibility of the block structure for each of these micro-credentials is predicated on a novel approach of embedding the essential prerequisites within each of the engineering courses. Students are introduced to essential supporting material directly within the engineering context, often at the beginning of the course, even before completing the dedicated supporting course where that knowledge will be taught more comprehensively. This method allows students to immediately grasp the relevance of their supporting coursework to engineering applications, overcoming a common barrier to degree completion where preliminary courses often feel disconnected from the core engineering curriculum. This also provides multiple opportunities for students to learn, utilize, and reinforce critical skills and knowledge. This innovative pedagogical approach will be further enhanced by customized AI course environments, leveraging generative AI systems for student placement, personalized learning, and assessment.

Upon successful completion of each fundamental micro-credential, students receive a micro-credential, providing tangible recognition of their progress and serving as a motivator to continue their studies. Notably, the Fundamentals of Materials micro-credential integrates a hands-on career technical education course, such as Fabrication, to provide students with valuable industry-relevant skills.

Program Entry & Exploration

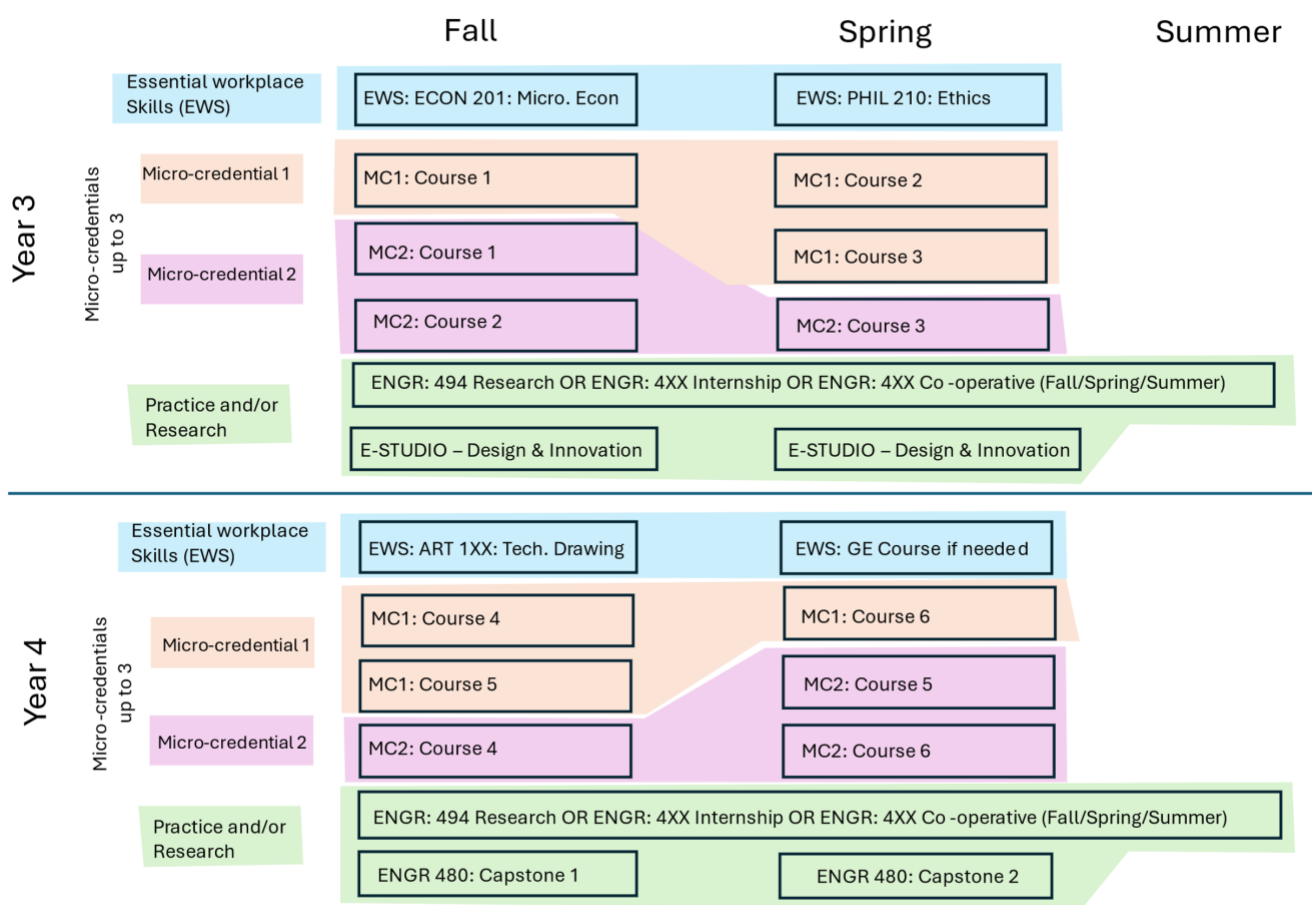
A key entry point to the program is the ENGR 1XX: Bridge to Engineering course. This introductory engineering course is designed as a "Find your Why" experience, helping students explore their interests in engineering and develop an academic plan. To aid in this discovery process, students will engage in novel activities like AI-simulated job interviews to identify necessary skills, thereby understanding the relevance of diverse engineering and supporting coursework. The course also incorporates mentoring from engineering professionals, encourages joining professional organizations, and introduces students to cross-cutting engineering themes such as design, problem-solving, independent learning, and professionalization. It will be offered as a dual-enrollment option in high schools to

prepare students for engineering programs, and as a summer bridge course for incoming on-campus students. It can also serve as a recruitment tool during the academic year for on-campus students exploring engineering as a major.

Flexible Pathways to Completion

Upon completion of the first two years of the program, students have the flexibility to either transfer to other institutions to complete a more specialized and traditional engineering degree (forming a 2+2 articulation pathway) or to remain within this program and pursue industry specialization micro-credentials during their third and fourth years at MiSU.

Years 3 and 4 at MiSU



The second half of the program, encompassing years three and four, focuses on advanced specialization. Students complete a robust 15-credit capstone sequence (research and/or practice focused), alongside additional engineering-focused micro-credentials chosen from a variety of options. These specialized micro-credentials will be developed in close collaboration with industries in the region, ensuring their relevance and applicability to current workforce needs. Throughout these latter years or during summers, students also

continue to fulfill their general education requirements, referred to as essential workplace skills courses. Upon successful completion of all micro-credentials, the capstone sequence, and the remaining general education courses, students will earn an Innovation Engineering degree.

Example

An example of an advanced specialization could be Automation Engineering, which would involve the following two micro-credentials:

- 1) Physical automation systems and integration, and
- 2) Digital control, data & system intelligence.

Automation integration projects would be incorporated into the 15-credit capstone experience.

Physical automation systems and integration – micro-credential

This micro-credential emphasizes the tangible components of automation, including mechanical power transmission, sensing, actuation, and integrated physical systems like robots. It covers how these physical elements function and are controlled.

- ENRT 112 (BSC) *Print Reading* – How to interpret physical system diagrams.
- ESRE 216 (BSC) *Mechanical Drive Systems* – How mechanical power is transmitted within machinery.
- *Analog & Power Electronics* – How to control physical systems via processing of continuous signals and controlling electrical power.
- *Sensors & Actuators* – How input (sensors) and output (actuators) devices connect the physical world to control systems.
- ENRT 116 (BSC) *Instrumentation & Control* – How to control physical processes via sensors and actuators.
- *Mechatronics* – How to bring all the elements (mechanical, electronic, and control principles) together to understand and design integrated physical automation systems.

Digital Control, Data & System Intelligence- micro-credential

This micro-credential concentrates on the computational, algorithmic, and communication aspects of automation. It covers how control logic is developed, signals are processed, data are managed across networks, and intelligent decisions are made for automation.

- CSCI 276 (MiSU)/ENRT 224(BSC) *Industrial Hardware Design* – How to develop the digital logic and design principles for industrial automation hardware.
- *Signals & Systems* – How to understand the mathematical and conceptual framework for processing data and designing control systems.
- *Feedback Control Systems* – How to apply the core algorithms and theory for regulating and optimizing dynamic systems.
- ENRT 240 (BSC) *Industrial Networks & SCADA* – How to manage data communication and supervisory control within industrial automation environments.

Either

- INAU 230 (BSC) *Industrial Robotics* – How to develop, operate, and program an industrial robot for various applications.

Or

- INAU 220 (BSC) *Machine Vision & Identification* – How to process digital images and apply algorithms for intelligent decision-making in automation.

Reason for “Innovation Engineering”

The "Innovation Engineering" program is named to reflect its focus on cultivating the mindset and skills needed to drive innovation in a rapidly evolving technological landscape. This concept aligns with a growing emphasis on innovation within the field of engineering, as evidenced by the following links.

1. Duke Engineering 2021 Ideas (<https://pratt.duke.edu/news/dukengineer-2021-ideas/>)
2. Berkeley SCET Innovation Engineering Principles (<https://scet.berkeley.edu/innovation-engineering-principles-and-methodology/>)
3. Smithsonian ([Innovation in Engineering—What It Is, and What It Isn't | Lemelson](#))
4. Case Western Reserve University: Innovative Engineering Practices (<https://online-engineering.case.edu/blog/innovative-engineering-practices>)

Industry Micro-credential Examples

Micro-credentials are an increasingly common and recognized form of professional development, widely adopted by industry and institutions such as:

1. Siemens (e.g. [Expedite - Skills for Industry microcredential | Siemens Software](#)), and

2. Bradshaw Research Institute for Minerals and Mining (BRIMM), based at the University of British Columbia (UBC) in Canada. ([Executive Microcertificate in Economic Leadership \(Program Bundle\) Spring 2025 - BRIMM](#))

June 27, 2025

Workforce Education Innovation Fund Grant Application

Institution: Minot State University

Project Title: Meeting Workforce Needs in Western North Dakota: Innovation Engineering at Minot State University

Question 25 Supporting Documentation: Letters of support are included from:

- Ackerman-Estvold
- Bismarck State College
- Minot Area Chamber Economic Development Corporation
- SandPro

June 25, 2025

Dr. Steven Shirley
President
Minot State University and
Dakota College at Bottineau
500 University Avenue West
Minot, North Dakota 58707

Re: **Letter of Support – Innovation Engineering Program
Minot State University**

Dear Dr. Shirley:

Ackerman-Estvold is a multi-disciplined engineering and architecture consulting firm with North Dakota offices in Minot, Fargo, and Williston. A majority of our team works within our Minot location, which is also the firm's headquarters. I am writing to express enthusiastic support for Minot State University's proposed Innovation Engineering program. We believe this program is essential for developing a robust, skilled local workforce that can meet the evolving needs of companies like ours in western North Dakota.

Ackerman-Estvold employs a diverse staff, including professional engineers, architects, and land surveyors; environmental scientists; GIS specialists; drone pilots; drafting technicians; construction staff; and support personnel. Like many other firms in the region, we face significant challenges in attracting and retaining talented, technically skilled employees to the area. The Innovation Engineering program directly addresses a long-standing need for locally educated engineering talent. As we have discussed, I have long advocated for the initiation of an engineering program to help keep skilled graduates in our community.

The Innovation Engineering program's structure is particularly appealing. Its focus on hands-on experiential learning directly with regional industries through a capstone sequence is highly beneficial. We are particularly keen to explore collaboration opportunities, including potential participation in capstone projects and advanced micro-credential development. Furthermore,

the program's flexibility, with foundational micro-credentials completed locally in the initial two years, combined with early "E-Studio" courses and industry experiences, will foster vital local ties, significantly increasing the likelihood of graduates choosing to remain and work in the area.

Ackerman-Estvold is ready to provide a representative to serve on the program's Business and Industry Leadership Team (BILT) or Advisory Board. This engagement will allow us to offer ongoing input on evolving industry needs and ensure the curriculum stays relevant.

We are confident that the Innovation Engineering program will contribute significantly to building a better-prepared workforce for western North Dakota companies and provide innovators to expand the region's economic base. Thank you for your leadership in pursuing this initiative for our community and region. We look forward to seeing its successful implementation and learning how we can continue to support the growth of a technically skilled workforce in the Minot region.

Sincerely,

ACKERMAN-ESTVOLD



Ryan Ackerman, PE
President/CEO

From: [Uhde, Alicia](#)
To: [Schmidt, Bryan](#); [Geller, Laurie](#)
Cc: [Dockett, Jason](#); [Harris, Amy](#)
Subject: BSC Statement of Support
Date: Thursday, June 26, 2025 9:15:02 PM

Statement of Support

Bismarck State College is pleased to support Minot State University in the development and delivery of its new Bachelor's Degree Program in Engineering. We value the opportunity to partner in providing technical coursework that aligns with our Associate in Applied Science (AAS) pathways in Energy, contributing to a seamless and meaningful academic progression for students.

This collaboration presents a unique opportunity to strengthen Minot State's Engineering program by leveraging Bismarck State College's long-standing expertise in energy education and our strong industry partnerships, particularly within the oil and gas sector of western North Dakota. Our shared commitment to workforce readiness and applied learning ensures students are equipped with both foundational knowledge and industry-relevant technical skills.

In addition, this partnership opens a new pathway for BSC's Pre-Engineering students to advance into a four-year degree that remains connected to applied and technical disciplines, broadening their career opportunities while supporting the regional demand for skilled engineering professionals.

We look forward to working together to support student success and meet the evolving workforce needs of North Dakota.

Sincerely,
Alicia Uhde
Interim VPAA
Bismarck State College



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June 25, 2025

Dr. Steven Shirley, President
Minot State University | Dakota College at Bottineau
500 University Ave West
Minot, ND 58707

RE: Minot State University's Innovation Engineering Program Proposal

Dr. Shirley,

Our mission at the Minot Area Chamber EDC (MACEDC) is to advocate for and invest in business activity by being a collaborative partner in the community, focused on improving quality of life for all. We are proud to support key initiatives that strengthen our regional economy and deeply value our strategic partnership with Minot State University and Dakota College at Bottineau.

Workforce development is a key pillar of MACEDC, and the development of technically skilled engineers is critical to addressing the significant workforce shortages in our community and region. The Innovation Engineering program stands out for its strong focus on hands-on, experiential learning, particularly through its collaboration with regional industries in the capstone sequence. The program's flexible structure—enabling students to complete foundational micro-credentials locally within the first two years, while engaging in early "E-Studio" courses and real-world industry experiences—will foster strong community ties and greatly increase the likelihood that graduates will remain in the area to live and work.

MACEDC fully supports Minot State University's proposal for an Innovation Engineering program. We appreciate your commitment to advancing an initiative that promises significant benefits for our entire region.

Sincerely,

Brekka Kramer
President | CEO
Minot Area Chamber EDC

Letter of Support for Minot State University's Workforce Education Initiative Funding Application

June 23, 2025

I am pleased to offer my enthusiastic support for Minot State University's application for the Workforce Education Initiative Funding grant offered by the state. Minot State University is developing an innovative engineering education program tailored to meet the workforce demands of the local oil and gas industry, and I commend their proactive approach to addressing these critical needs.

Minot State University has actively engaged with industry leaders, including myself, to gain a comprehensive understanding of our workforce requirements. Recently, their team conducted an on-site visit to SandPro, where they met with my Automation team to discuss our company's current and future needs. Furthermore, they have sought my input during the program's drafting stages and invited my continued involvement in its development to ensure alignment with industry expectations. This collaborative approach demonstrates Minot State's commitment to creating a program that directly addresses the skilled labor shortages faced by our industry, both now and in the years to come.

As the petroleum industry prioritizes safer work environments and cost savings by reducing personnel exposure to high-pressure areas, the demand for skilled automation technicians and engineers is poised to grow significantly. I anticipate that these roles will represent the most critical need for our sector moving forward. By offering locally accessible, industry-responsive education, Minot State's proposed program will play a vital role in supporting the sustained growth and innovation of our industry. I am eager to continue collaborating with Minot State's faculty to ensure the curriculum remains relevant, up-to-date, and equipped to prepare students for successful careers in our region.

In conclusion, I strongly endorse Minot State University's application for the Workforce Education Initiative Funding. Their proposed engineering education program represents a strategic and forward-thinking solution to our industry's workforce challenges, and I am confident it will deliver significant value to our community and economy.

Sincerely,


Joshua Blackaby
Vice President and Co-Founder
SandPro



2025-2027 Application for Workforce

Education Innovation Grant Funds

Application Number.

20

Institution.

Minot State University

Applicant Name.

Amy Lee

Applicant Title.

Chairperson

Applicant Department.

Department of Nursing

Project Title.

Building Clinical Readiness: Simulation Director, Support Staffing, and Technology for ND Nursing Education

Briefly describe the proposed project.

The Building Clinical Readiness project proposes the development of a state-of-the-art, collaborative Simulation Center in Minot to support workforce development in North Dakota's healthcare sector. Led by Minot State University (MSU) and jointly used by Dakota College at Bottineau (DCB), the initiative includes hiring a Simulation Director and Support Staff, upgrading simulation equipment and technology, and modifying facilities to enhance clinical training capacity.

This Simulation Center will be housed in the forthcoming Regional Health Sciences Institute in downtown Minot which will be in a building currently occupied by Trinity Health. Funds were appropriated to MSU during the 2025 Legislative Session for purchasing this Trinity building to establish this new Health Institute, led collaboratively by DCB and MSU, to address critical health-related workforce shortages in the region. This project was highly rated by the ND State Board of Higher Education and supported by the Legislature. The Simulation Center envisioned with this proposal will be a critical initiative helping ensure overall success of this unique Health Institute project. The Center will deliver high-fidelity, competency-based education using immersive technologies. Designed for adaptability, the Center will serve students across multiple institutions and support regional healthcare employers by producing job-ready nursing graduates.

Does the proposal meet the statutory guidance of N.D.C.C. 15-10-75?

Yes

Indicate which statutory objective this proposal will advance (as required by N.D.C.C. 15-10-75).

Hiring and training new and existing instructors; Facility modifications and equipment installation; Equipment & technology purchases

Briefly describe how the funds will advance the objectives.

This Building Clinical Readiness proposal directly addresses North Dakota's critical healthcare workforce development needs by supporting simulation-based education and training for nursing students. As demand for well-prepared nurses – particularly in rural areas - continues to rise, simulation training plays a vital role in enhancing clinical readiness, critical thinking, and confidence among graduates. It reduces the need for extensive on-the-job training, allowing new nurses to contribute effectively to the workforce immediately upon hire.

To advance the objective of hiring and training new and existing instructors, funds will support the establishment of a fully operational simulation center in Minot, staffed by a dedicated Simulation Director and support personnel. This center will strengthen student preparation for both Minot State University (MSU) and Dakota College at Bottineau (DCB) nursing programs, and has the potential to serve interdisciplinary healthcare learners across the region. Requested funds include \$170,000 to support 1.5 years of salary for the Simulation Director and \$80,000 to fund one year of support personnel.

Additionally, \$50,000 is requested to support the objective related to facility modifications and equipment/technology purchases. This funding will be used for high-fidelity simulation manikins, audiovisual systems, facility updates, and equipment installation. These enhancements are essential for delivering immersive, competency-based education aligned with evolving healthcare demands. The simulation center will be designed for long-term adaptability, supporting future integration of advanced technologies and curricular updates.

When will the proposed project be ready to admit students?

Fall 2026

Amount of funding requested.

\$300,000

What other sources of funding or resources support the proposed project?

Because of strong community and regional support for the MSU Nursing Simulation Center, a variety of funding sources and partners have committed to supporting the project. Minot State University provides recurring institutional funding for faculty salaries and infrastructure. The North Dakota Nursing Education Consortium (NDNEC) offers biennial support for simulation efforts across NDUS institutions. Trinity Health contributes in-kind support, including simulation space through the purchase of Health Center West (via Senate Bill 2003), access to clinical technology, curriculum collaboration, advisory input, and equipment consultation and faculty support. MSU's IT and Facilities Services will assist with equipment installation and provide long-term maintenance support.

Which identified workforce development need will this project address?

The MSU Nursing Simulation Center proposal will directly address workforce development needs critical to preparing students for real-world clinical practice. Chief among these is access to consistent, high-quality simulation and training experiences. One key area of focus in simulation is training students to manage high-risk, low-frequency events – situations that are uncommon in daily practice but have profound impacts on patient outcomes when they occur. Examples include cardiovascular emergencies, neonatal resuscitation, and obstetric hemorrhage. Simulation allows students to experience and respond to these scenarios in a safe, controlled environment. By expanding simulation capacity, students will gain hands-on, technology-enhanced experience that closely mirrors the realities and pressures of today's healthcare environments.

What are the project's metrics for success? How will these metrics be achieved?

The MSU Nursing Simulation Center will be successfully operational by Fall 2026.

Two cohorts of both MSU (and DCB) students will utilize the Center during the funding period (Fall 2026 and Spring 2027).

These metrics will be achieved through the following steps:

- Hire a qualified Simulation Director to lead operations and curriculum alignment, Fall 2025
- Hire a Simulation Technology/Support Staff to manage equipment, scheduling, and consumables
- Purchase equipment by Spring 2026
- Complete facility renovations and technology installation by Fall 2026
- Launch a shared simulation scheduling and utilization system for MSU and DCB by Fall 2026
- Continue to gather formative evaluation data from student participants to advise and support potential program revisions
- Gather student user feedback data to be used for summative report analysis

How does the project support student retention in North Dakota to meet the needs of local industries?

Strengthening in-state education infrastructure ensures that students can receive robust clinical training within North Dakota, encouraging them to remain in-state for both their education and professional careers. This initiative supports the healthcare pipeline by enhancing student engagement and satisfaction through immersive simulation experiences, and reinforcing regional partnerships with Trinity Health and First District Health Unit to align simulation-based education with local workforce needs.

How are the students supported by this project prepared to enter the workforce with minimal additional on-the-job training?

Simulation training enhances clinical readiness, critical thinking, and confidence among graduates, enabling new nurses to enter the workforce with reduced reliance on on-the-job training. Through this project, students will train on high-fidelity manikins that simulate complex clinical scenarios. They will be guided by faculty with simulation expertise who facilitate real-time, scenario-based learning, and participate in interdisciplinary simulations that mirror real-world team dynamics. These experiences ensure graduates possess the hands-on skills, communication competencies, and clinical judgment necessary to make an immediate and effective impact in the workforce.

Are there private sector partners in creating/offering the project?

Trinity Health is private sector partner who contributes in the following ways:

- Trinity provides consultation and training equipment.
- Trinity shares simulation space and supports integration of clinical content.
- Trinity is part of the Nursing for the Future 2021-2026 agreement with MSU and DCB. As part of this agreement, Trinity provides support for MSU and DCB nursing programs.

Collaborations ensure simulation content reflects employer expectations and current practice standards.

Please see the letter of support from Trinity Health included with the supporting documentation.

Is this project offered in partnership with another NDUS institution?

Yes, MSU and DCB are partners with this initiative. This collaborative effort between MSU and DCB exemplifies efficient system-wide resource utilization. MSU will oversee center development and operations, while DCB will actively participate in use, and cost-sharing of the facility. Both schools will pool their simulation resources to support the MSU Simulation Center.

- MSU oversees development, staffing, and management of the simulation center
- DCB shares simulation space, faculty training opportunities, and cost-sharing of resources

This collaboration maximizes system resources and standardizes clinical skill development across programs.

Does this project support a program already approved per SBHE policies and NDUS procedures?

Yes

Describe how the project is novel and innovative.

This project is novel in both its structure and approach to simulation-based education. It brings together MSU and DCB in a collaborative, inter-institutional partnership that maximizes shared resources and standardizes clinical training across programs. The simulation spaces are designed to be flexible and future-ready, with infrastructure that supports the integration of emerging technologies. Furthermore, the simulation content is co-developed with healthcare employers, embedding real-world expectations and needs into student learning. The center's modular design enables rapid adoption of new training tools and interdisciplinary content, reinforcing its role as a simulation center for healthcare workforce preparation.

While some simulation centers currently exist within the NDUS system, this collaborative approach sets a precedent by serving both degree pipelines and workforce training needs. It represents an efficient use of state resources while expanding access to high-quality clinical training opportunities.

How will the project be sustained after WEIF Grant funding is expended?

The sustainability of the simulation center is supported through a combination of institutional funding, partner collaboration, and external resource development. The salaries for the Simulation Director and Support Staff will be absorbed into Minot State University's operational budget. Ongoing simulation maintenance will be funded through student clinical fees and continued support from the North Dakota Nursing Education Consortium (NDNEC). Trinity Health and other regional partners will maintain their in-kind contributions, including simulation space and support services, under the existing Nursing for the Future agreement. In addition, MSU will actively pursue further sustainability through external grant applications and workforce training program partnerships.

How will the project adapt over time to changing workforce needs and technological changes?

The simulation center is intentionally designed for long-term adaptability to meet the evolving needs of North Dakota's healthcare workforce. Its infrastructure allows for the seamless integration of emerging technologies, including virtual and augmented reality. AI-assisted simulation software, and advanced telehealth modules. The modular layout of the simulation spaces supports flexible training configurations and future expansion. Regular reviews with industry partners will inform updates to both curriculum and equipment, ensuring alignment with current practice standards. Faculty will stay informed of national best practices through participation in simulation and technology conferences, while the center will continue to align with AACN Essentials, North Dakota Board of Nursing (NDBON) expectations, and statewide workforce trends.

June 27, 2025

Workforce Education Innovation Fund Grant Application

Institution: Minot State University

Project Title: Building Clinical Readiness: Simulation Director, Support Staffing, and Technology for ND Nursing Education

Question 25 Supporting Documentation: Letters of support are included from:

- Minot Area Chamber Economic Development Corporation
- Trinity Health



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June 25, 2025

Dr. Steven Shirley, President
Minot State University | Dakota College at Bottineau
500 University Ave West
Minot, ND 58707

RE: Minot State University's Simulation Center WEIF Proposal

Dr. Shirley,

Our mission at the Minot Area Chamber EDC (MACEDC) is to advocate for and invest in business activity by being a collaborative partner in the community, focused on improving quality of life for all. We are proud to support key initiatives that strengthen our regional economy and deeply value our strategic partnership with Minot State University and Dakota College at Bottineau.

Workforce development is one of MACEDC's key pillars of focus. We believe the proposed Simulation Center at Trinity Health Center West in downtown Minot would be a transformative addition to healthcare education. By providing a realistic, controlled learning environment, this center would equip students with the hands-on experience needed to succeed before they enter the workforce.

As our region faces a significant shortage of nurses and healthcare professionals, this Simulation Center would serve as a vital, shared resource that supports the development of a highly skilled healthcare workforce across our area.

MACEDC fully supports Minot State University's application to the Workforce Education Innovation Fund (WEIF) for funding to bring this project to life. This investment in educational infrastructure is both timely and essential to meeting the healthcare needs of our communities and region.

Sincerely,

Brekka Kramer
President | CEO
Minot Area Chamber EDC



June 25, 2025

Dr. Steven Shirley, President
Minot State University and
Dakota College at Bottineau
500 University Ave West
Minot, ND 58707

Subject: Support of Minot State University's Simulation Center WEIF proposal

Dear Dr. Shirley,

On behalf of Trinity Health and our affiliate critical access hospitals – including St. Luke's Hospital (Crosby), Mountrail County Medical Center (Stanley), Presentation Medical Center (Rolla), St. Andrew's Health Center (Bottineau), St. Aloisius Hospital (Harvey), Kenmare Hospital, and Tioga Medical Center – I am pleased to offer Trinity Health's support for the proposed Minot State University Simulation Center and its request for funding through the Workforce Education Innovation Fund (WEIF).

The development of a state-of-the-art Simulation Center in the Trinity Health Center West facility, scheduled to be repurposed as a Regional Health Sciences Institute, represents a vital investment in the preparation of a highly skilled nursing and allied health workforce for our region. High-fidelity simulation plays an increasingly critical role in healthcare education, offering safe, controlled environments for students to develop clinical reasoning, practice complex procedures, and enhance interprofessional collaboration before entering the workforce.

Trinity Health recognizes this Simulation Center will not only elevate the quality of nursing education in our region but will also serve as a shared resource that benefits our entire healthcare system. With the ongoing workforce shortage and the growing complexity of patient care, the need for highly prepared practitioners has never been greater.

As this Center becomes operational, Trinity Health is committed to its ongoing partnership with Minot State University. Trinity Health will continue offering clinical placements, faculty collaboration, and strategic guidance to ensure students trained through this simulation-based model are well-prepared to transition seamlessly into practice. This aligns directly with our long-term workforce planning and patient care quality goals.

Trinity Health fully supports this Workforce Education Innovation Fund proposal and sees it as a transformative step in strengthening our regional health infrastructure. We are proud to partner with Minot State University in shaping the next generation of healthcare professionals for northcentral and northwestern North Dakota.

Sincerely,



John M. Kutch,
President & CEO

cc: St. Luke's Hospital
Mountrail County Medical Center
Presentation Medical Center
St. Andrew's Health Center
St. Aloisius Hospital
Kenmare Hospital
Tioga Medical Center

Application Number.

4

Institution

North Dakota State College of Science

Applicant Name.

Clint Gilbertson

Applicant Title.

Program Coordinator

Applicant Department.

Fire Science

Project Title.

L.I.V.E. FIRE – Learning In a Versatile Environment – Fire Instruction, Readiness, and Education

Briefly describe the proposed project.

The NDSCS Fire Science Program proposes the development of a modular fire training facility constructed from repurposed shipping containers. This facility will serve as a permanent, on-campus structure designed to provide realistic, scenario-based fire and rescue training aligned with NFPA standards. The project will enhance hands-on learning opportunities for Fire Science students and regional fire department partners.

Does the proposal meet the statutory guidance of N.D.C.C. 15-10-75?

Yes

Indicate which statutory objective this proposal will advance (as required by N.D.C.C. 15-10-75).

Equipment and technology purchases

Briefly describe how the funds will advance the objectives.

Grant funding will provide the critical startup capital necessary to launch Phase I of the modular fire training facility. These funds will be used to purchase and modify shipping containers, pour a concrete foundation, and acquire essential training props and safety features. This investment will establish a permanent, on-campus training environment that directly supports the development of job-ready, NFPA-certified firefighters. By eliminating the current dependency on off-site facilities, the project will enhance scheduling flexibility, training consistency, and program scalability.

Ultimately, the grant will drive innovation in fire science training while strengthening regional emergency preparedness and workforce pipelines.

When will the proposed project be ready to admit students?

Spring 2026

Amount of funding requested.

\$200,000

What other sources of funding or resources support the proposed project?

Other sources of funding or resources include instructional fees, opportunities for grants, and business & industry partnerships. The project breakdown is \$182,950 for the fire training facility and \$17,050 for the concrete foundation.

Which identified workforce development need will this project address?

This project addresses the growing regional and statewide need for highly trained, workforce-ready firefighters and emergency responders. Many rural and municipal fire departments face ongoing recruitment and retention challenges, made worse by limited access to realistic, hands-on training environments. By establishing a dedicated, on-campus fire training facility, NDSCS will be able to produce graduates with advanced practical skills aligned with NFPA standards and industry expectations.

Additionally, this facility supports workforce development goals by:

- Providing consistent, high-quality, scenario-based training experiences.
- Preparing students for Firefighter I, II, Rescue Technician, and Instructor certifications.
- Increasing the pipeline of qualified fire service professionals across North Dakota.
- Enhancing the skillsets of current firefighters through continuing education partnerships.

The project directly aligns with the mission of workforce education by expanding across to critical training infrastructure and building a resilient, job-ready emergency services workforce.

What are the project's metrics for success? How will these metrics be achieved?

The success of the modular fire training facility project will be measured through a combination of implementation milestones, program impact metrics, and workforce outcomes:

1. Facility Development Milestones

Metric: Completion of Phase I facility (foundation, containers, and core training features) within 12 months of funding.

How Achieved: Project-managed collaboration between NDSCS Fire Science and Forge Fire & Company and the NDSCS Construction Technology programs, with clear timelines and task ownership.

2. Program and Student Outcomes

Metric: Increase in Fire Science student enrollment by at least 10% within the first academic year following facility completion.

How Achieved: Incorporation of the facility into the core curriculum and active promotion during campus visits, career fairs, and dual credit events.

3. Industry and Community Engagement

Metric: Minimum of 4 external training events hosted annually for regional fire departments and emergency services partners.

How Achieved: Strategic outreach to rural departments, NDFA, and mutual aid partners to schedule hands-on training and continuing education courses.

Each of these metrics supports the broader goal of expanding workforce readiness and enhancing the practical skills of both emerging and current fire service professionals.

How does the project support student retention in North Dakota to meet the needs of local industries?

The project strengthens student retention by creating a more engaging, hands-on, and career-aligned educational experience for Fire Science students. By offering realistic, scenario-based training on campus, the facility deepens student investment in their program of study and improves their confidence in field readiness – two key factors in program persistence and completion. Moreover, the facility supports stronger connections between students and local fire departments, many of which already sponsor NDSCS students or serve as internship and employment partners. These relationships not only reinforce a sense of professional belonging but also increase the likelihood that graduates will remain in North Dakota to serve in the communities where they trained.

How are the students supported by this project prepared to enter the workforce with minimal additional on-the-job training?

This project ensures that students are workforce-ready by integrating real-world, scenario-based training directly into their Fire Science curriculum. The modular fire training facility replicates actual fireground conditions, enabling students to practice and master critical skills – such as search and rescue, ventilation, forcible entry, ladder operations, and fire attack tactics – under realistic conditions.

By training on the same tools, equipment, and environments used in professional fire service, students develop confidence, technical competence, and decision-making abilities that closely mirror actual field operations. The facility also supports certification-based training aligned with NFPA standards for Firefighter I, II, Rescue Technician, and Fire Instructor I, which are commonly required by North Dakota departments.

In addition, the program's existing partnerships with local and regional fire departments provide students with live operational experience through internships and department sponsorships. These partnerships reinforce classroom learning and allow students to integrate quickly into full-time roles with minimal additional training.

Together, the facility and its supporting curriculum produce job-ready graduates who can immediately contribute to the operational needs of local fire departments and emergency response agencies.

Are there private sector partners in creating/offering the project?

The proposed project is strongly supported by the NDSCS Fire Science Program Advisory Council, which includes a diverse group of fire service leaders from across North Dakota. This council is made up of both career and volunteer fire chiefs, training officers, and emergency response professionals who represent departments of all sizes – from large municipal agencies to small rural districts. Their input ensures that the training facility is aligned with current and emerging industry standards and that it meets the operational needs of local fire departments.

In addition to strategic guidance, many advisory council members have committed to contributing in the following ways:

- Providing access to training props, surplus equipment, and safety gear for facility use.
- Participating in live demonstrations and training events hosted at the facility.
- Offering internship, mentorship, and employment opportunities to NDSCS Fire Science Students.

- Serving as evaluators or adjunct instructors, helping ensure training rigor and professional relevance.

Furthermore, regional fire departments that sponsor students (such as the West Fargo and Fargo Fire Departments) serve as key private-sector collaborators. Their direct involvement in student education, combined with their support of this facility project, ensures a seamless pipeline from classroom to firehouse with strong job placement potential.

This collaboration reflects a robust public-private partnership model and reinforces the program's mission to prepare job-ready graduates who can meet the staffing and skill needs of North Dakota's emergency services.

Is this project offered in partnership with another NDUS institution?

No

Does this project support a program already approved per SBHE policies and NDUS procedures?

Yes

Describe how the project is novel and innovative.

The project represents a new, forward-thinking approach to firefighter education by utilizing modular, repurposed shipping containers to create a customizable, on-campus fire training facility. Unlike traditional fixed fire towers or rented off-site spaces, this structure is cost-effective, rapidly deployable, and designed for phased expansion based on program needs and available funding. Its flexibility allows instructors to adapt scenarios quickly and safely, providing students with a more dynamic and immersive learning experience.

The facility enables year-round, campus-based fireground simulation, allowing for greater integration of live, scenario-based training into the core Fire Science curriculum. This ensures that students are exposed to realistic conditions that reflect modern emergency response environments – including ventilation, search and rescue, forcible entry, and multi-level operations.

In addition, this project enhances the program's ability to host joint training events with regional departments, engage in mutual aid simulations, and conduct live demonstrations for prospective students, advisory council members, and the broader community. These efforts elevate the visibility and effectiveness of the program while supporting broader recruitment and public safety education goals.

By combining scalable infrastructure with advanced instructional design, this project sets a new standard for affordable, high-impact firefighter training in North Dakota and beyond,

How will the project be sustained after WEIF Grant funding is expended?

The project is designed with long-term sustainability in mind. Once the initial facility is constructed using grant funds, ongoing support will be maintained through existing institutional resources, program partnerships, and operational integration within the Fire Science curriculum. Because the structure is modular, durable, and low-maintenance, future upkeep and expansion will require minimal financial outlay compared to traditional training facilities.

The Fire Science program has strong, ongoing partnerships with regional fire departments and sponsors, many of whom provide in-kind support, training equipment, and instructional assistance. These relationships will continue to support the use and evolution of the facility.

In addition, the facility will be fully integrated into Fire Science course delivery, ensuring it remains a core instructional asset used every semester. As program enrollment grows, tuition and course fee revenues will contribute to ongoing maintenance and minor upgrades.

Finally, the visibility and impact of the training site will position it as a valuable asset for future grant applications, department collaborations, and hosted regional training events, further offsetting costs and supporting continued development.

How will the project adapt over time to changing workforce needs and technological changes?

The modular design of the proposed fire training facility allows for flexible adaptation as workforce demands and fire service technologies evolve. The use of repurposed shipping containers enables the structure to be reconfigured, expanded, or enhanced with minimal cost and disruption. This adaptability ensures that new training scenarios, tactical evolutions, and specialized instruction – such as hazardous materials response, confined space rescue, or renewable energy-related fire risks – can be incorporated as industry needs change.

The facility will also serve as a platform for integrating emerging fire service technologies, including thermal imaging, digital fire behavior simulation, and smart equipment training. As part of an academic institution, the Fire Science program continuously evaluates curriculum and training methods to align with updated NFPA standards, evolving department expectations, and technological advancements in emergency response.

Ongoing input from the program’s Advisory Council – comprised of career and volunteer fire service leaders from across the state – ensures that the facility remains aligned with real-world operational trends, helping the program proactively adjust to new equipment, tactics, and staffing models.

This built-in flexibility, coupled with strong industry feedback loops, ensures the project remains relevant, future-focused, and responsive to the evolving landscape of the fire and emergency services profession.



Forge Fire & Company LLC
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New Albany, OH 43054
6143259840
orders@forgefireandco.com

Estimate 1260

ADDRESS	SHIP TO	DATE	TOTAL
Clinton Gilbertson North Dakota State College of Science 800 6th Street North Wahpeton, North Dakota 58075	Clinton Gilbertson North Dakota State College of Science 800 6th Street North Wahpeton, North Dakota 58075	06/07/2025	\$182,950.00

SALES REP Eric Ahlden	SALES REP PHONE (843)870-5024	SALES REP EMAIL eahlden@forgefireandco.com
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ACTIVITY	QTY	RATE	AMOUNT
40' Container Hi cube. Includes purchase & transport to FFC Shop.	1	5,500.00	5,500.00
20' Container Hi cube. Includes purchase & transport to FFC Shop.	1	4,200.00	4,200.00
Container Paint Prep containers and 2 coats of oil based industrial metal paint. Color options: - Matte/Flat Black - Battleship Gray - Dark Olive Green (Military OD Green)	1.50	2,500.00	3,750.00
Engineering Plans/Design Includes: • Custom 3D CAD design • Structural engineering • Foundation engineering • NFPA 1402 certification	1	18,000.00	18,000.00
Fabrication & Set-Up Labor Fabrication & Set-Up Labor	1	35,000.00	35,000.00
Burn Room- 8'x8' 8'x8' heavy steel gauge lined. Patented bolt-in system for long term maintenance benefits. 2400 degree insulation. Includes air control vents, steel floor, steel burn shell, 2400 degree insulation. Location: TBD by client layout	1	20,000.00	20,000.00
Overhead Hallway Prop- 4'x10' 10' Overhead Hallway Burn Prop for Flow & Move Tactics: • Actual real 2x4/drywall ceiling that can burn • Quick jig setup • Fire extension/TIC Op	1	9,000.00	9,000.00

ACTIVITY	QTY	RATE	AMOUNT
Bravo Door Built in force door based on our industry leading Alpha prop platform. Inward and outward opening. Basic package provides the following tactical options: - Prop door mounts on both sides of the frame covering all inward/outward swings applications - Flexible and crush section training door - Multi-level locking - Built-in rebar/hinge cutting tree - Drop bar capable with additional drop bar package* - Panic bar cut thru system capable with additional package*	1	9,600.00	9,600.00
Doors- Fire-Rated Exterior Door Inward or outward opening. Lockable.	2	3,000.00	6,000.00
Windows Heavy gauge steel windows with closures. Sliding style for VES clearing. Accepts drywall for clearing.	4	1,750.00	7,000.00
Window Sash Universally fits all windows. Center frame clearing prop.	1	2,200.00	2,200.00
Window Cut Prop (Rebar Station) Quick jig set-up for rebar cut work	1	2,200.00	2,200.00
Window Bailout Anchor Overhead bailout anchors for above grade windows and balconies or safety on Apex prop	2	250.00	500.00
Stairs- Exterior Straight Run PE designed/stamped/fabricated to support firefighting tactical loads.	1	12,500.00	12,500.00
APEX Roof Prop • 8' x 8' cut area. • Hangers accept 2x4, 2x6, 2x10 w/quick pins • Modular construction • Flat, 4:12, 6:12, 8:12, 10:12, 12:12 & 16:12 pitching • Drywall punch capabilities	1	12,500.00	12,500.00
Custom Floorplan Layout Custom floorplan designed with client. To include, but not limited to: hallways, doors, and walls options.	1	15,000.00	15,000.00
Shipping/Setup Includes: • Shipping of all prefabricated containers/materials • Crane & equipment rental • Anchoring & flashing materials • Travel & Turnkey setup labor	1	20,000.00	20,000.00
THE CRARY DESIGN: Versatile and flexible design that cover a generous amount of tactics in one small package. 544 SF of training space...can be added into future build phases.	SUBTOTAL		182,950.00
	TAX		0.00
NFPA 1402 CERTIFIED VIA 3RD PARTY ENGINEER.	TOTAL		\$182,950.00

TURNKEY CONSTRUCTION: includes our innovative/patented/proprietary modular interchangeable bolt-in construction on ALL FEATURES.

THANK YOU.

WARRANTY: One year warranty coverage on craftsmanship for

all features including building

TERMS: A 50% down payment is required for hire. 25% will be due at mid point with the remaining 25% due at completion of the project. **Performance Bonds are an additional cost at 3% of the entire project.

Accepted By

Accepted Date



CLASS A SOLE SOURCE LETTER

Forge Fire & Company's exclusive, patent-pending Modular/Interchangeable Bolt-In Prop Systems, specifically designed for Class A Training Buildings. Our innovative products and solutions are proprietary and represent the first and only offering in the industry that provides a complete modular system with fully interchangeable bolt-in tactical training features.

Forge Fire & Company is the sole provider of these revolutionary systems and all related customizable components. Our turn-key solutions include everything from certified engineering, permits, NFPA compliance, site preparation, and concrete work, ensuring a seamless process from start to finish.

Unique Benefits of Forge Fire & Company Products

1. **Versatility** – Our systems allow for phased construction, enabling departments to build according to their budgets and easily add or replace features as needed.
2. **Realism** – Our modular system provides the flexibility to alter building layouts and components over time, preventing training from becoming stagnant.
3. **Modular Construction** – Our bolt-in design significantly reduces maintenance costs and repair time compared to traditional welded-in systems.
4. **Faster Project Timelines** – Our system ensures quicker build times, allowing departments to begin training sooner.
5. **Training Program Growth** – Our system supports continuous training evolution by allowing users to add new props and layouts, ensuring progressive learning environments.
6. **Certified Designs** – All our designs are engineer-certified and meet NFPA compliance standards.

Our patent-pending system is unmatched in the market, offering complete modularity and customization. Forge Fire & Company is the only manufacturer capable of providing bolt-in, interchangeable components across all tactical features listed below:

- Alpha Forcible Entry Doors
- Bravo Forcible Entry Doors
- Apex Roof Ventilation Props
- Moveable Walls (Mazes)
- Flashover Rooms
- Thermal Monitoring Systems
- Class A Burn Rooms
- Fire-Rated Entry and Interior Doors
- Rappel Anchoring Systems
- Sliding or Hinged Windows
- Window Cut-Down Props
- Security Window Cut Props
- Industrial-Grade Staircases and Railings
- Overhead Hallway Fire Props
- Knee Wall Fire Props
- Mobile/Modular Custom Trailer Props
- Industrial-Grade Catwalks, Landings, and Work Decks

Training and Consulting Services

Forge Fire & Company also provides expert training and consulting services to support fire departments in building efficient and effective training programs. Our team brings over 20 years of experience in pioneering innovative training courses, props, and facilities. We offer:

- **Training Courses** – Expert evaluation of hands-on training curricula.
- **Training Efficiencies and Strategies** – Custom strategies to improve training delivery.
- **Training Facility/Prop Evaluation** – Tailored summaries for needed training props and facility improvements.
- **Engineering Evaluations** – Detailed assessments of current infrastructure with recommendations for growth.
- **Construction Consultation** – Comprehensive advice on facility design and construction.

Forge Fire & Company is the only provider offering complete modular, interchangeable bolt-in training props for Class A Training Buildings. Our patent-pending designs and proprietary manufacturing process ensure that no other vendor can replicate the unique features and benefits of our systems.

By partnering with Forge Fire & Company, fire departments gain access to industry-leading innovation that will enhance training programs, reduce maintenance costs, and ensure the longevity and adaptability of training facilities for years to come.

If further information is required to complete your procurement process, please do not hesitate to contact us.

Sincerely,



Todd Shepherd
Owner/Co-Founder
Forge Fire & Company

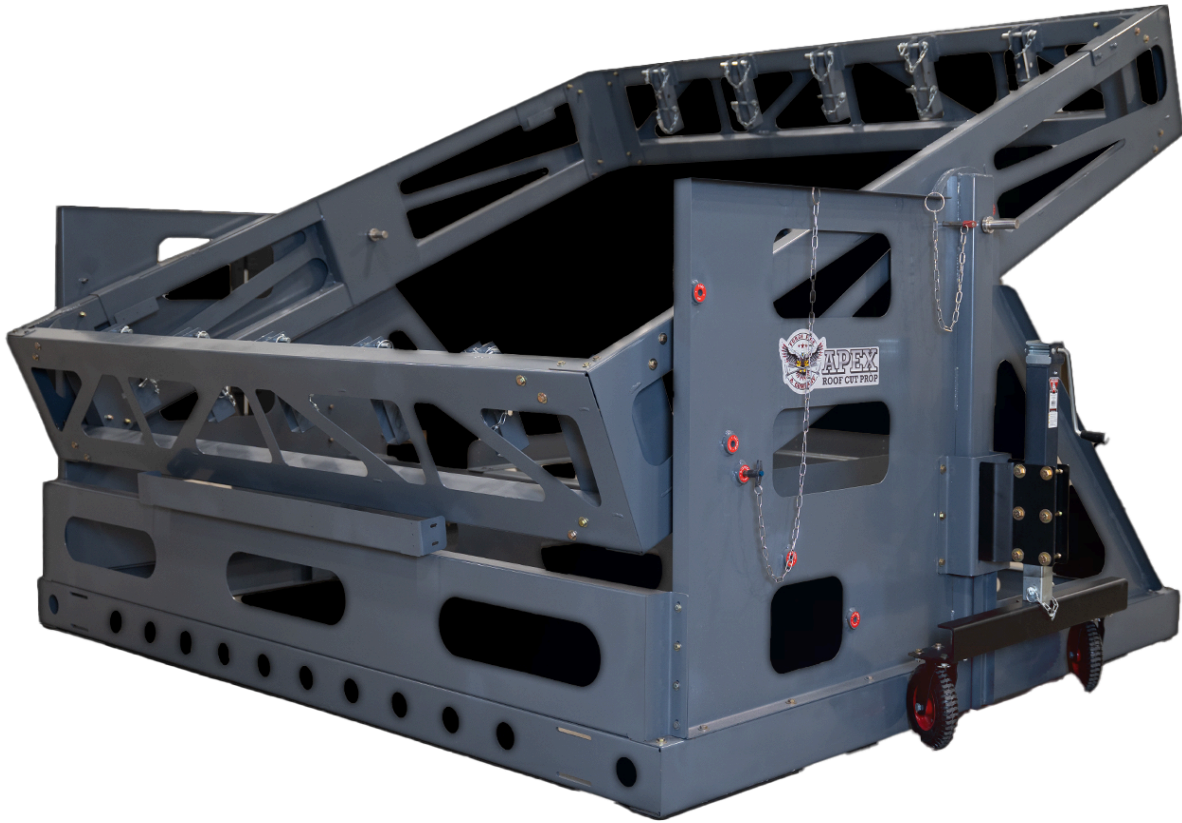
Alpha Elite Forcible Entry Door



Bravo Forcible Entry Door



Apex & Apex Mobile Roof Prop



Burn Rooms



Knee Wall



Moveable Walls



Overhead Burnable Hallways



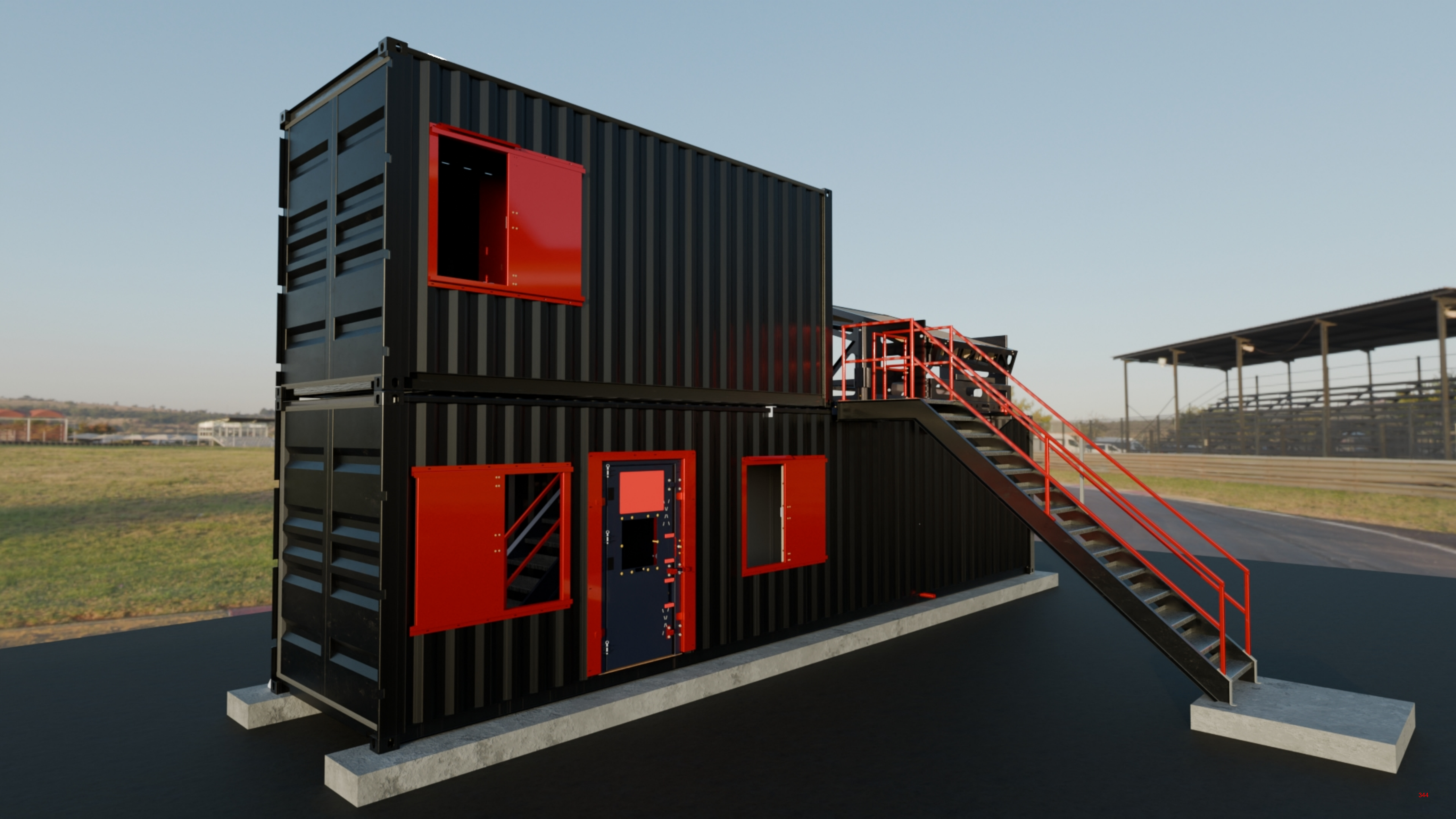
Customizable Smokehouse Mobile Trailer



Fully Customizable Class A Training Building

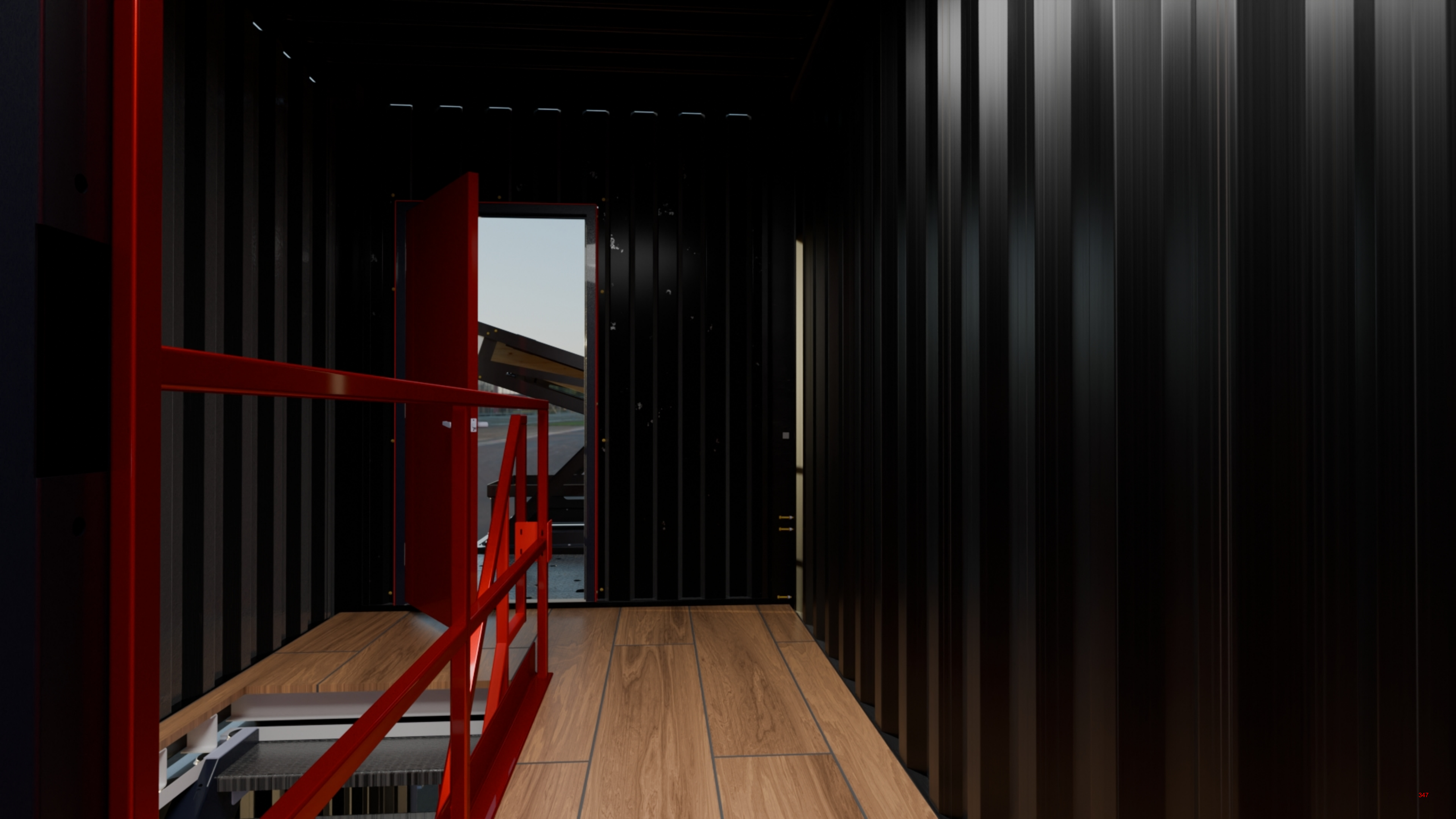


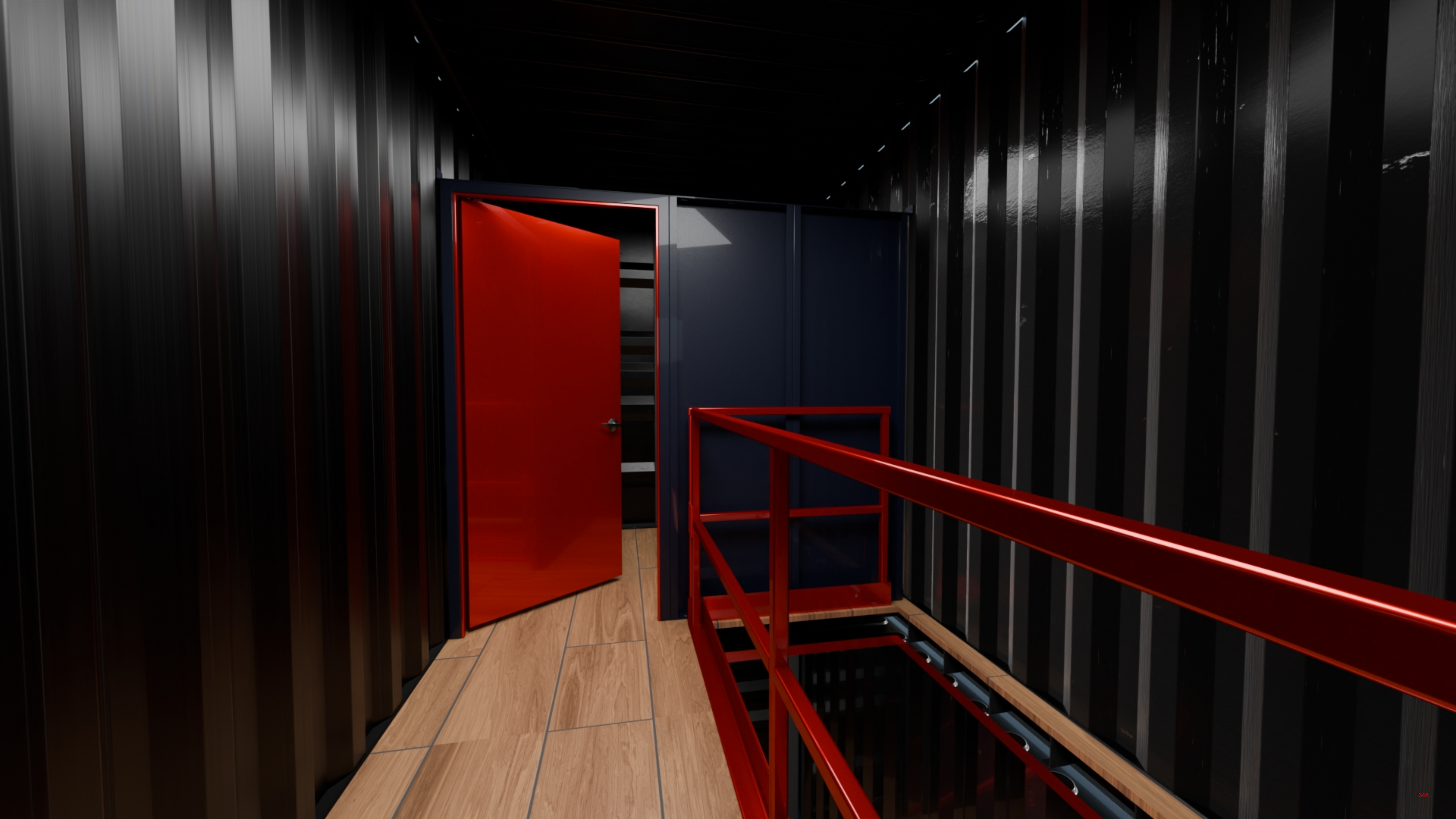


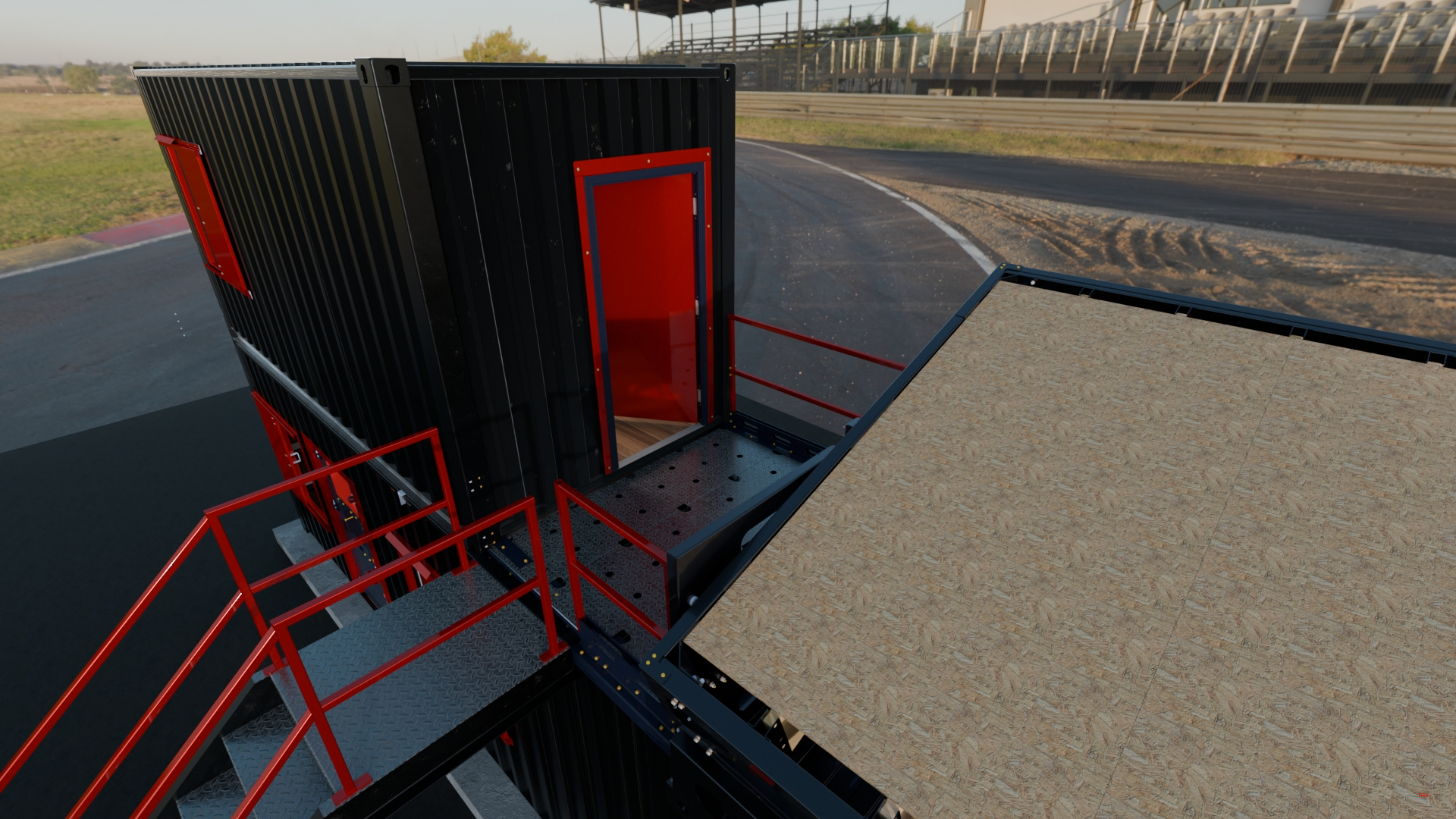












Application Number.

16

Institution

North Dakota State College of Science

Applicant Name.

Nathan Cowan

Applicant Title.

Instructor/Program Coordinator

Applicant Department.

Aviation Maintenance Technology (AMT)

Project Title.

AMT Program Initiative

Briefly describe the proposed project.

In response to N.D.C.C. 15-10-75 directing the SBHE to award funds to NDUS institutions “to create and enhance educational programs that address the workforce needs of North Dakota business and industry”, North Dakota State College of Science is developing a new program in Aviation Maintenance Technology (AMT). This program will be offered at the NDSCS Fargo campus, with the first cohort starting August 2025. This program will be an FAA Part 147 Certificated program.

Students will have the option to enroll in the Airframe & Powerplant Certificate program or the Associate Degree program in Aviation Maintenance Technology. The curriculum is comprised of the three FAA 147 sections of General, Airframe, and Powerplant. Upon completion of each section, students will be eligible to complete FAA examinations required to meet Part 65 Airman Certification.

Does the proposal meet the statutory guidance of N.D.C.C. 15-10-75?

Yes

Indicate which statutory objective this proposal will advance (as required by N.D.C.C. 15-10-75).

Curriculum Development; Equipment & technology purchases; Facility modifications and equipment installation; Hiring and training new and existing instructors; Education program promotion; Enhancement of postsecondary partnerships with primary and secondary schools

Briefly describe how the funds will advance the objectives.

The funds requested are essential for advancing several key statutory objectives (6 of 6 statutory objectives in N.D.C.C. 15-10-75).

- Curriculum Development – Fargo Jet Center has been contracted to support development of the Aviation Maintenance Program. This includes the creation, implementation, and oversight of

curriculum.

- Equipment & Technology Purchases – The purchase of training aides, computer software, and other equipment will require a larger investment the first few years of the program.
- Facility Modifications and Equipment Installation – Current hangar and classroom improvements include utility installations, technology modifications, and safely securing equipment in place. These items require a larger initial investment, then will taper off quickly.
- Hiring and Training new and Existing Instructors – Fargo Jet Center has been contracted to support the professional development of NDSCS aviation instructors.
- Education Program Promotion – The NDSCS Marketing team will work with the Fargo Jet Center to promote the program by attending events, meeting with industry and academic organizations in the region, and by developing digital media.
- Enhancement of Postsecondary Partnerships with Primary and Secondary Schools – NDSCS has existing partnerships with area high schools that will be further developed to explore new opportunities to expand the new Aviation Maintenance Technology Program.

When will the proposed project be ready to admit students?

Fall 2025

Amount of funding requested.

\$1,000,000

What other sources of funding or resources support the proposed project?

NDSCS received a grant award of \$307,608 from the Aviation Workforce Grant program from the FAA on March 4, 2024. In December 2024, NDSCS received notification that, based on their successful performance, they would be granted a second year of funding. NDSCS submitted a budget for \$307,608, and on January 27, NDSCS received notification that, due to a lack of funding, the FAA would need to reduce our second-year budget to \$203,022. Following the issuance of several Executive Orders in January 2025, NDSCS received notice that the second-year funding is on hold until a program review is completed. While the FAA has approved the second year of funding, final approval by the U.S. Department of Transportation is still pending. NDSCS received \$200,000 in a Technical Skills grant from the North Dakota Department of Commerce and a grant of \$80,126 from the North Dakota Aeronautics Commission. In SB 2003, NDSCS was awarded a one-time appropriation of \$300,000 to help with start-up costs of the AMT program. The AMT program intends to use this money for costs associated with the AMT instructor/program coordinator position.

NDSCS has secured \$563,137 in donated supplies and equipment in support of the AMT program from aviation industry leaders across the country. Donations include six engines from AVCO Corporation's Lycoming Engines Division valued at \$187,000, two engines from Pratt and Whitney valued at \$54,000, and a 1973 Cessna 340 from the Fargo Jet Center valued at \$94,924. A wide array of aircraft parts has been donated by NASA, Sioux Air Inc., Stryker, Coastal Skies Maintenance LLC., Aer Sole, Carlos Mario Arango, Stevens Aerospace and Defense Systems LLC., Aero Systems LLC., D-J Engineering Inc., and Harco Aviation LLC.

Which identified workforce development need will this project address?

Airplane Mechanic/Technician has been identified as an in-demand occupation by the Workforce Development Council and Job Service (In-Demand Occupations flyer)

Job Service ND predicts a 14.29% growth in job openings for 49-2091 Avionics Technicians & Aircraft Electricians and 15.42% for 49-3011 Aircraft Mechanic & Service Technicians, Aircraft Engine Specialist, and Airframe Mechanic from 2023 to 2033. For region 5, that includes the Fargo Metropolitan area, the projected growth is 27.59% for 49-3011 Aircraft Mechanic & Service Technicians, Aircraft Engine

Specialist, and Airframe Mechanic.

Like many states, North Dakota is experiencing many job openings due to employees retiring or transitioning to other types of employment as they age. Individuals aged 55 to 64 make up 11.7% of North Dakota's population (U.S. Census Bureau, Data Profiles, North Dakota, Accessed October 10, 2024). As this generation retires/transitions to retirement, the North Dakota workforce loses a highly skilled and experienced group of workers. The growth in openings for 49-3011 Aircraft Mechanic and Service Technicians, Aircraft Engine Specialists, and Airframe Mechanics due to labor force exits and occupational transfers accounts for 83.76% of openings predicted for 2023-2033 (160 of 191 open positions).

Job Service North Dakota reports the average wage for 49-3011 Aircraft Mechanics and Service Technicians, Aircraft Engine Specialists, and Airframe Mechanics to be \$75,940 and the average wage for 49-2091 Avionics Technicians and Aircraft Electricians to be \$48,440.

What are the project's metrics for success? How will these metrics be achieved?

FAA Part 147 certification limits class sizes to 25. The AMT program will start out with a daytime cohort utilizing three classrooms for a capacity of 75. If demand grows to the point to support an evening cohort, another 75 students could be added to the program. Once the AMT program is launched, NDSCS would explore adding other related aviation credentials in Avionics, Non-Destructive Inspection, and Composites. The first cohort of AMT students would start training in August 2025 and NDSCS's projects starting 20 students in the first cohort with enrollment growing to 50 students in 2026, to 75 students in 2027, and to 100 students in 2028.

The FAA Part 147 Certificate requires a Minimum Passage Rate of 70% for students who take written, oral, and practical examinations. This is for the most recent 3-years of operation. NDSCS will monitor student retention, FAA Exam passage rates, and job placement rates as required by certifying and accrediting organizations, and to ensure training curriculum and instructors are providing quality instruction.

How does the project support student retention in North Dakota to meet the needs of local industries?

The AMT program is a direct response to N.D.C.C. 15-10-75 "to create or enhance educational programs that address the workforce needs of North Dakota business and industry". NDSCS's AMT program will be the only training program in the state of North Dakota accredited through the Federal Aviation Administration's Part 147 Certification for airframe and powerplant technicians. North Dakota is one of only two states in the nation without an airframe and powerplant (A&P) program. Currently, North Dakota residents interested in aircraft maintenance must leave the state to receive training. When these individuals leave the state for training there is a high probability that they will secure employment outside the state. The AMT program at NDSCS will support the growth of North Dakota residents receiving aviation maintenance training in North Dakota leading to employment at North Dakota aviation businesses and organizations.

How are the students supported by this project prepared to enter the workforce with minimal additional on-the-job training?

The curriculum for the Aviation Maintenance Program will be based on the guidelines from the Federal Aviation Administration's (FAA) Part 147 Certification for airframe and powerplant (A&P) technicians. Skills attained include aircraft systems inspection and repair, airframe structural repair, sheet metal fabrication, composite layups, and advanced avionics troubleshooting. The structure of the FAA Part 147 training program requires 1932 hours while will be spread over a two-year period of full-time, three semester (fall, spring, summer) enrollment. At the end of the required 1932 hours, graduates will receive a certificate. Graduates can choose to enroll for one additional semester to complete general education requirements for an associate's degree.

Graduates will be able to find entry level positions with the following occupation codes: 49-2091 Aircraft Electrician and Avionics Technicians, and 49-3011 Aircraft Engine Specialist, Aircraft Mechanics and Service Technicians, and Airframe Mechanics. Potential employers include Northrop Grumman, General Atomics, Delta Airlines, United Airlines, Cirrus Aircraft, Fargo Jet Center, and other companies that support aviation maintenance and assembly.

Are there private sector partners in creating/offering the project?

An example of NDSCS's collaboration with aviation partners is NDSCS's partnership with the Fargo Jet Center. Through an FAA Aviation Workforce Grant, NDSCS has partnered with the Fargo Jet Center to develop and launch the AMT Program.

The Fargo Jet Center provides technical assistance and industry leadership while facilitating the building of relationships with other potential aviation industry partners across the region.

NDSCS is working to develop sponsorships for students enrolled in the AMT program and discussions are currently underway with the Fargo Jet Center and Dakota Air Parts. Another important track for increasing enrollments for the AMT Program is to build pathways from secondary aviation programs to the NDSCS AMT program. NDSCS is working with Cass County CTE to begin building an aviation career pathway. The goal is to have the first pathway established by the 2026-2027 academic year.

Is this project offered in partnership with another NDUS institution?

There is currently no other NDUS institution officially involved in the AMT program. In recognition of UND's leadership in the aviation industry in North Dakota, NDSCS has reached out to Dr. Kraus, Aerospace Dean, at UND and the UND Aerospace Foundation. Program alignment between NDSCS and UND will help build a foundation of highly skilled aviation professionals to support the growth of the aviation industry in North Dakota. The AMT advisory council includes representation from UND.

Does this project support a program already approved per SBHE policies and NDUS procedures?

No

If not previously approved, is the project unique in the NDUS system?

This Aviation Maintenance Technology program will be the first and only of its kind in the NDUS system. North Dakota has not offered this type of training in nearly 30 years.

Describe how the project is novel and innovative.

As the only Aviation Maintenance Technology program in North Dakota, there are numerous opportunities to build a new and innovative career pipeline. By partnering with high schools, CTE centers, and military bases, we will attract the students needed to sustain the program, and by collaborating with regional aviation industry leaders like Fargo Jet, Northrop Grumman, and Cirrus, our graduates are guaranteed employment upon graduation.

How will the project be sustained after WEIF Grant funding is expended?

Within two years, NDSCS estimates that the AMT program will be self-sustaining by reaching the projected enrollment goal of 75 students by 2027. This will be accomplished through the building of pathways from secondary aviation programs in North Dakota to NDSCS's AMT Program, the development of industry sponsorships for enrolled students, and the offering of related aviation certificates in Non-Destructive Inspection, Avionics, and Composites. Major equipment and training materials costs will be completed within the first two years of the program through grants (state, federal, and private) and donations from aviation industry partners.

NDSCS has a strong tradition of working with industry partners to provide students with sponsorship

opportunities in many of the Career and Technical Education programs it offers. Potential aviation partners have expressed strong support for the creation of an AMT certification program at NDSCS which indicates there will be strong industry support for students sponsorships for the AMT program.

How will the project adapt over time to changing workforce needs and technological changes?

FAA Part 147 certification limits class size to 25. The AMT program will start out with a daytime cohort utilizing three classrooms for a capacity of 75 students. If demand grows to the point to support an evening cohort, another 75 students could be added to the program. Once the AMT program is launched, NDSCS would explore adding other related aviation credentials in Avionics, Non-Destructive Inspection, and Composites.

06-25-2025 Press Release

North Dakota State College of Science (NDSCS) received its official Federal Aviation Administration (FAA) Part 147 Air Agency Certificate today, formally authorizing the College to train the next generation of Aircraft Maintenance Technicians (AMTs). The certificate — presented during a brief ceremony inside the AMT Program Hangar — marks the final milestone in a 12-month application, inspection, and approval process.



“We are honored to receive this FAA certification, and we’re excited to begin preparing students for high-demand careers in aviation maintenance,” said Terry Marohl, NDSCS Dean of Transportation. “This recognition reaffirms our commitment to hands-on, industry-driven education, and we’re ready to deliver.”

Joining Marohl at the ceremony was Nathan Cowan, Aircraft Maintenance Technology (AMT) Program Coordinator, who accepted the certificate on behalf of the College. Representatives from the Fargo Jet Center and the FAA’s Flight Standards District Office (FSDO) presented the certificate to the NDSCS team.

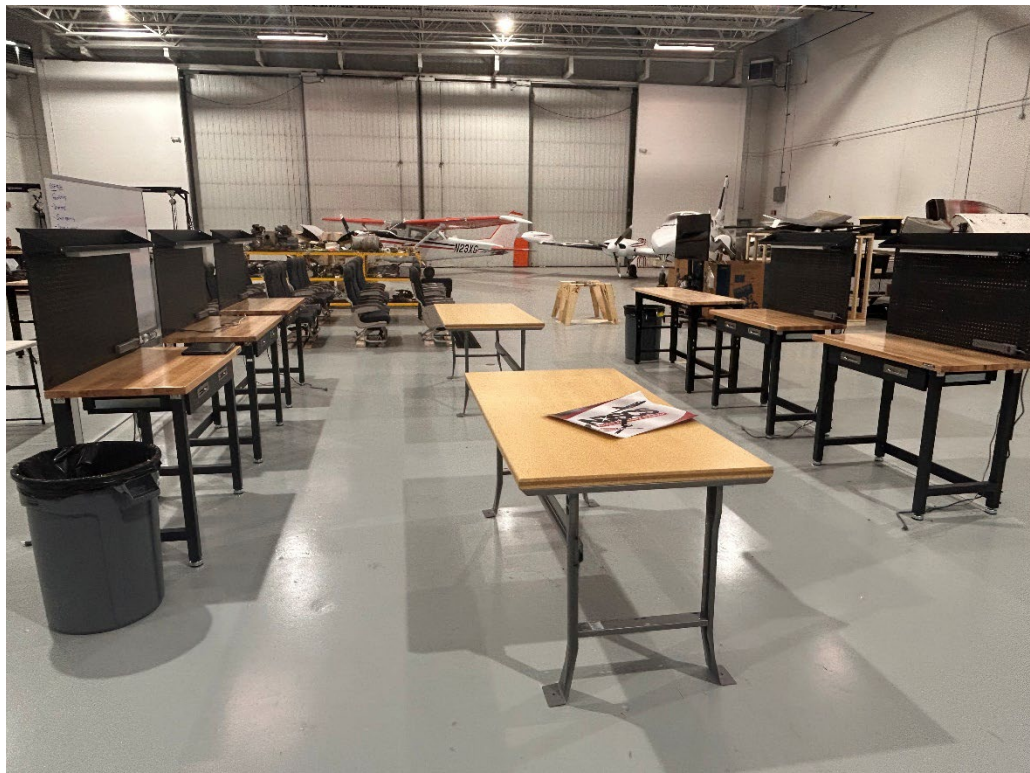
“With this certificate in hand, we can give students a direct, affordable pathway into one of the fastest-growing careers in aviation,” said Cowan. “Our students will graduate workforce-ready and in high demand.”

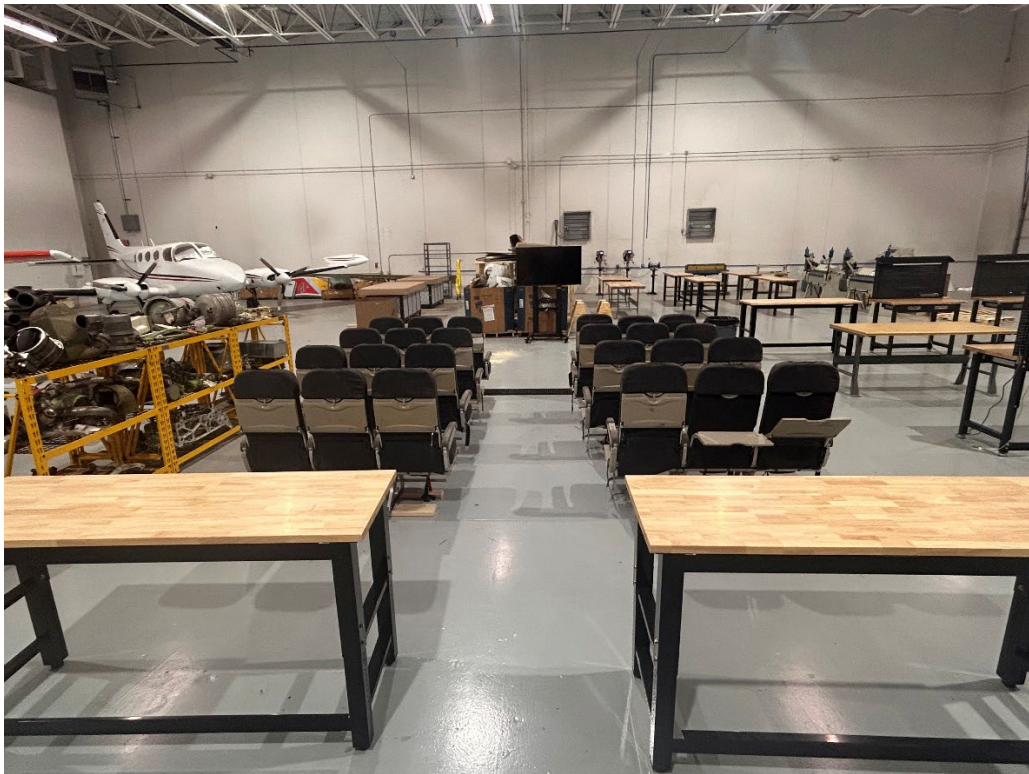
Set to launch in Fall 2025, the program is the only FAA-certified offering of its kind in North Dakota. NDSCS will welcome its first class of AMT students to its 19th Avenue North Fargo location, with instruction taking place in both classroom and hands-on at the AMT Program Hangar in collaboration with the Fargo Jet Center.

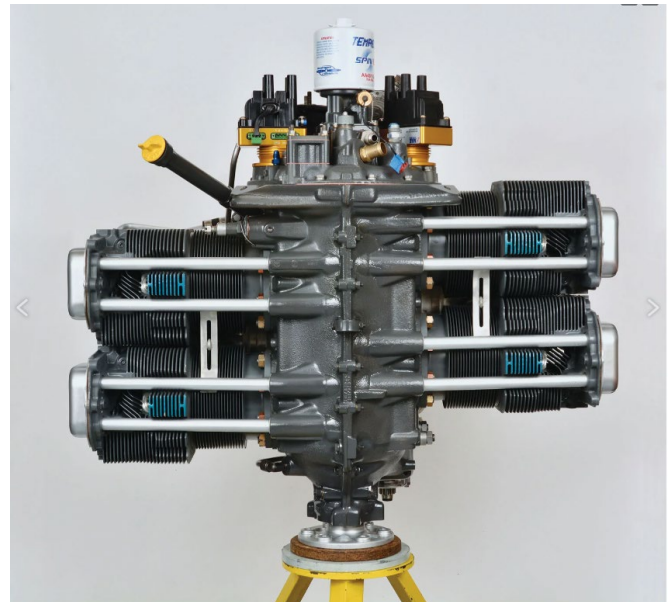
“This is more than a certification—it’s a commitment to students, employers, and the future of aviation in North Dakota,” added Marohl.

For more information about the program, visit NDSCS.edu/Aviation.

Photo caption (Left to Right): Darren Hall, Fargo Jet Center, VP Business Development; Gary Kwasniewski, Aviation Safety Inspector, FAA; Nathan Cowan; Terry Marohl; Joshua Rychener, Aviation Safety Inspector, FAA; Todd Roth, Frontline Operations Manager, FAA







AIRCRAFT ENGINE STAND KIT (WITH CASTER





Aviation Maintenance at NDSCS

History

- Aviation Maintenance offered at NDSCS from 1928 to the late 1950's.
- The first course, Aeronautic Ground Work, began in the fall of 1928. The class of ten students was tasked with rebuilding a wrecked plane from an airfield near Minneapolis. The rebuilt plane took flight on February 6, 1929.
- The citizens of Wahpeton were pioneers in the growing aviation industry with the Wahpeton Airport being on the route from Minneapolis to Fargo. Two pilots, Arthur Sampson and Carl Freeman, based at the Wahpeton Airport, instructed aviation courses at NDSCS.
- In this early aviation program, students could train in the mechanics/groundwork of aviation or be trained to be pilots.
- NDSCS was one of five programs nationally and served as a model for programs across the United States.
- In 1930, R.V. Billington, 12 state regional agent for trade and industrial education, visited the NDSCS aviation program as it was the only trade school in the nation to teach aviation as a trade.
- In 1931, Aviation Department was certified as an Official Government Repair Station by the U.S. Department of Commerce making them the first air repair depot in the state of North Dakota.
- In 1935, the Aviation Department builds fast, low-wing, monoplane called the Wildcat. The Wildcat is 15 ft long, 5 ½ ft. in height, 22 ft. wingspan, weighs 560 lbs., and can reach the speed of 150 miles per hour.

Program Milestones for the Relaunching of Aviation Maintenance at NDSCS

Since receiving the Aviation Workforce Development grant for \$307,608 from the FAA in March of 2024, NDSCS has been working in collaboration with the Fargo Jet Center to launch a new aviation maintenance program for the Fall Semester of 2025. Cohorts can have up to 25 students and the program would start with one daytime cohort. With three classrooms, three cohorts at a capacity of 75 could be in progress at once. As the program grows and if there is interest, any evening cohort could be added to the program. Milestones through May 2025 include:

- Contracted with the Fargo Jet Center for Jason Smith to be acting Program Coordinator to facilitate the FAA Part 147 certification process, to develop program curriculum, to coordinate donations, to oversee hangar preparation, begin program outreach, and to develop supply and equipment orders.
- NDSCS administration submitted paperwork for program approval from the NDSCS Curriculum Committee, the Higher Learning Commission (HLC), the State Board of Higher Education (SBHE), and the U.S. Department of Education. The AMT Program at NDSCS has been approved by all the listed organizations.
- Textbooks have been identified, course syllabi have been developed, and aviation maintenance courses have been added to the course catalog.
- The Lead Instructor has been hired.
- Held first advisory council meeting for the Aviation Maintenance Program.

- Most supplies and tools for the hangar laboratory have been ordered and received.
- Secured a \$200,000 Technical Skills grant from the ND Department of Commerce.
- Secured a \$80,126 education grant from the North Dakota Aeronautics Commission
- Collected \$563,137 worth of donated equipment and supplies. Includes donated 1973 Twin Cessna from Weather Modification, LLC. and several engines from Lycoming and Pratt & Whitney.
- Purchased 1967 Cessna from Government Surplus for \$5,000
- Developed marketing materials and started to attend career fairs, aviation events, and other recruiting events.
- Negotiated with Fargo Jet Center for rental of hanger space and identified two/three classrooms to be dedicated aviation classroom space in the NDSCS 19th Avenue location.
- Met first year milestones for FAA grant and received a second year of funding. Second year funding, \$203,022, has been approved by the FAA and is awaiting approval by the U.S. Dept. of Transportation.
- NDSCS Building Construction students assisted in preparing the hangar by installing the tool crib and constructing the equipment forms.
- Incorporated Aviation Maintenance Technology courses into Fall 2025 class schedule.
- Final visit with the FAA for Part 147 approval was completed in early June and the NDSCS AMT Program was approved. NDSCS received its Part 147 Certificate on June 25, 2025.

Future Development

- \$175,000 in pending grant applications to the GW Bailey Foundation and Ray Foundation.
- Development of related aviation certificates in Non-Destructive Inspection, Avionics, and Composites.
- Development of industry sponsorships for enrolled students.
- Building pathways from secondary aviation programs to the NDSCS's AMT Program.

WEIF AMT Budget

Expense	Cost Per Year	2-Year Cost
Curriculum Development and revisions to meet FAA Certification	\$50,000.00	\$100,000.00
Hiring Adjunct instructors and training of new and existing instructors	\$65,000.00	\$130,000.00
Facility Modifications and Equipment Installation	\$90,000.00	\$180,000.00
Aircraft Purchase	\$25,000.00	\$50,000.00
Donation Acquisitions	\$25,000.00	\$50,000.00
Equipment & Technology Purchases	\$200,000.00	\$400,000.00
Education Program Promotion	\$20,000.00	\$40,000.00
Enhancement of Postsecondary Partnerships	\$25,000.00	\$50,000.00
TOTALS	\$500,000.00	\$1,000,000.00

Facility Modifications and Equipment Installation: \$90,000/Yr

The hands-on components of the curriculum will take place at a hangar located at Fargo's Hector International Airport (1756 23rd Ave. N.), less than a mile from the NDSCS Fargo campus on 19th Avenue. Currently, NDSCS leases the space from the Fargo Jet Center at a rate of \$7,500 per month, with the potential for the lease to increase to \$10,000 per month. However, discussions are ongoing with the Airport Authority, and there is the possibility that the lease could be reduced to \$1 per year for the first two years.

Aircraft Purchase: \$25,000/Yr

The program meets the FAA requirement of having one aircraft and wants to acquire more to improve the capabilities of the program. The goal is to have additional aircraft, with at least two being fully intact.

Donation Acquisitions: \$25,000/Yr

NDSCS has collected donations from multiple organizations, with each having associated costs for shipping, transaction fees, and expenses to cover personnel travel.

Equipment & Technology Purchases: \$200,000/Yr

This is the largest initial expense but will significantly decrease once all major equipment is acquired. After that, the cost will be limited mostly to smaller tool purchases and consumables required for training. Specific expenses include engines, training aids, and raw materials like sheet metal, rivets, and electrical wire.

Curriculum Development and revisions to meet FAA Certification: \$50,000/Yr

As a regional leader in the aviation industry, the Fargo Jet Center has been contracted to support the development of the AMT Program. This includes the creation, implementation, and oversight of curriculum and the support of the professional development of NDSCS aviation Instructors. Once the program is certified, the hangar is set-up, and classes start, Fargo Jet Center will serve in an advisory role to support the growth phase of the program the first 2-years.

Hiring Adjunct instructors and training of new and existing instructors: \$65,000/yr

This program will utilize adjunct instructors in collaboration with the Instructor/Program Coordinator to deliver AMT courses.

Education Program Promotion: \$20,000/Yr

To spread awareness about a new program requires additional marketing campaigns. Specific expenses include printed flyers, banners and recruiting material, and digital media advertising.

Enhancement of Postsecondary Partnerships: \$25,000/Yr

These expenses cover the cost for the NDSCS recruiters to travel to events, conferences, pay vendor fees, and purchase materials required to develop relationships with various organizations to build pathways and partnerships for student success. NDSCS has existing partnerships with area high schools that will be further developed to explore new opportunities to expand the new Aviation Maintenance Program.



2025-2027 Application for Workforce Education Innovation Grant Funds

Application Number.

1

Institution.

Valley City State University

Applicant Name.

Alan D. LaFave, President

Applicant Title.

AI Institute for Teaching and Learning

Applicant Department.

Valley City State University – all departments

Project Title.

Artificial Intelligence (AI) Institute for Teaching and Learning

Briefly describe the proposed project.

VCSU proposes to establish the state's premier "AI (Artificial Intelligence) Institute for Teaching and Learning," dedicated to shaping the future of K-12 education and the VCSU learning experience through AI integration. Our institute will focus on:

1. Teacher Training: Offering comprehensive AI training programs for K-12 educators and VCSU faculty, ensuring they are equipped with the necessary skills to navigate the AI-driven future of education.
2. Career-Ready Graduates: Providing all graduates with the expertise needed to thrive in an AI-centric world, fostering innovation and adaptability.
3. Creating Personalized Learning Pathways: Spearheading research initiatives to develop and implement new educational paradigms empowered by AI and learning science to enhance student learning outcomes and teaching effectiveness.
4. AI Engagement and Excellence: Incentivizing AI engagement among educators, staff, and students, fostering a culture of inclusion and excellence in AI education.
5. Ubiquitous Access: Ensuring widespread access to AI tools and resources for employees and students, leveling the playing field and promoting inclusivity in AI education.
6. Model Institution: VCSU will provide AI expertise for North Dakota employees by creating a model institution for the responsible and effective deployment of AI across the entire organization, setting standards for AI integration and ethical usage.

Does the proposal meet the statutory guidance of N.D.C.C. 15-10-75?

Yes

Indicate which statutory objective this proposal will advance (as required by N.D.C.C. 15-10-75).

Curriculum Development; Equipment and technology purchases; Hiring and training new and existing instructors; Education program promotion; Enhancement of postsecondary partnerships with primary and secondary schools

Briefly describe how the funds will advance the objectives.

Each academic program and department will be implementing AI in their classes and curriculum. A new program, Data Analytics and Visualization, has recently been launched that addresses specific components of AI, however, we view this as a more holistic approach to train and develop each student in every program on the wise and ethical use of AI. Our institute will be focused on teacher training, developing career-ready graduates, creating personalized learning pathways, promoting AI engagement and excellence, ubiquitous access, and serving as a model institution for the North Dakota University System. No new FTE's are part of this proposal, however, training of existing instructors is anticipated.

When will the proposed project be ready to admit students?

Fall 2025

Amount of funding requested.

\$1,500,000

What other sources of funding or resources support the proposed project?

We are working closely with DPI to see if there are additional funds that can be applied to help with scholarships and training opportunities for K-12 educators.

Which identified workforce development need will this project address?

Training K-12 teachers and providing career ready graduates in all areas of study.

What are the project's metrics for success? How will these metrics be achieved?

1. Continuous monitoring of number of teacher training completions – annual progress reports
2. Ensuring AI is implemented across the curriculum – annual progress reports
3. New certificates, minors and undergraduate majors implemented – annual progress reports
4. Implementation of technology improvements and tools including web site, chatbots, softwares, and AI powered chatbots for enrollment management – annual progress reports on chatbot usage and enrollment data

How does the project support student retention in North Dakota to meet the needs of local industries?

This project will enhance the overall student experience and help fill local workforce needs in the community and region. Examples of this include John Deere, Eagle Creek Software, local city and county government, local school district employees.

How are the students supported by this project prepared to enter the workforce with minimal additional on-the-job training?

Students supported by this project will be trained in the latest available applications of AI technologies, giving them a solid advantage as they enter the workforce.

Are there private sector partners in creating/offering the project?

Preliminary conversations with the Department of Public Instruction and Fargo School District are underway, specifically pertaining to competency based learning and personalized curriculum pathways.

Is this project offered in partnership with another NDUS institution?

VCSU stands ready and is willing to serve as a partner with all of the NDUS institutions offering teacher education preparation.

Does this project support a program already approved per SBHE policies and NDUS procedures?

No

If not previously approved, is the project unique in the NDUS system?

We will simultaneously seek approval from the SBHE to offer the AI Institute in accordance with Policy 307.1.

Describe how the project is novel and innovative.

VCSU has a long standing reputation for innovative excellence. We believe this is one of the most innovative opportunities our university has proposed in our history. It blends our historic missions success in teacher training with innovative opportunities for all K-12 across our state and region and each academic program in our catalog.

How will the project be sustained after WEIF Grant funding is expended?

The program will be sustained through enrollment and retention growth resulting in increased general tuition revenues and through continuing education revenues from existing K-12 teachers enrolled for future summer training opportunities. We will also continue to seek other grant opportunities as they arise.

How will the project adapt over time to changing workforce needs and technological changes?

Artificial Intelligence is expected to continue changing and evolving at a rapid pace. As AI continues to drive innovation across various industries, including teacher education, VCSU will continuously monitor these changes and innovations in the tools, pedagogy, and training methods to remain a leader in delivering optimized preparation to K-12 teachers and our university students and faculty.



Valley City State University AI (Artificial Intelligence) Institute for Teaching and Learning June 2025

Valley City State University has a long and distinguished history in preparing teachers and leading in innovation. The SBHE designated VCSU as a center of excellence in the application of instructional technology in 1996 when the campus became the first in the state and second in the nation to provide laptop computers for all students. This practice continues today, and our commitment to innovation, education, instructional technology leadership, and high impact practices benefiting student learning remains a top priority. There will be no new FTEs required for this proposal.

Executive Overview:

VCSU proposes to establish the state's premier "AI (Artificial Intelligence) Institute for Teaching and Learning," dedicated to shaping the future of K-12 education and the VCSU learning experience through AI integration. Our institute will focus on:

- 1. Teacher Training:** Offering comprehensive AI training programs for K-12 educators and VCSU faculty, ensuring they are equipped with the necessary skills to navigate the AI-driven future of education.
- 2. Career-Ready Graduates:** Providing all graduates with the expertise needed to thrive in an AI-centric world, fostering innovation and adaptability.
- 3. Creating Personalized Learning Pathways:** Spearheading research initiatives to develop and implement new educational paradigms empowered by AI and learning science to enhance student learning outcomes and teaching effectiveness.
- 4. AI Engagement and Excellence:** Incentivizing AI engagement among educators, staff, and students, fostering a culture of inclusion and excellence in AI education.
- 5. Ubiquitous Access:** Ensuring widespread access to AI tools and resources for employees and students, leveling the playing field and promoting inclusivity in AI education.
- 6. Model Institution:** VCSU will provide AI expertise for North Dakota employees by creating a model institution for the responsible and effective deployment of AI across the entire organization, setting standards for AI integration and ethical usage.



Budget request: \$1.5M

Our proposed budget will enable us to establish a strong foundation in the initial years and sustain our efforts in the long term.

Detailed Narrative

➤ 1. Teacher Training (\$500K)

Offering comprehensive AI training programs for K-12 educators and VCSU faculty, ensuring they are equipped with the necessary skills to navigate the AI-driven future of education. Coordination and partnership with DPI, EduTech, and NDI is anticipated.

- a. Provide multiple training opportunities for VCSU faculty. VCSU faculty will be part of the team that will steer subsequent K-12 teacher training.
- b. Provide online, adaptive learning opportunities at the basic, intermediate, and advanced levels for K-12 teachers.
- c. Host two or more summer AI workshops for K-12 teachers lasting 2-3 days.

➤ 2. Career-Ready Graduates (already in progress - \$100K)

Providing all graduates with the expertise needed to thrive in an AI-centric world, fostering innovation and adaptability.

- a. Systematically ensure AI is infused across the curriculum. Support faculty research of the AI applications within each academic program or field of study and ensure students gain AI experience as it relates to their program/field of study. This discipline specific approach goes beyond general use of AI to focus on what the student will need in their field to be proficient with AI. Faculty summer work to research and explore how AI is impacting their field, then working with a support team of curriculum developers, instructional designers, IT procurement assistants, AI developers, student work assistants, and others to integrate AI into the curriculum.
- b. Experiential Learning. VCSU already emphasizes student experiential learning, and we are seeking ways to leverage AI to provide even more opportunities for students.
 - i. Create a partnership between IT and academic departments to provide students in software engineering and other areas with professionally guided, hands-on experience for academic credit to create or help deploy AI applications for other departments across campus or even enterprise systems. VCSU has established an AI policy and an AI Review Board consisting of institutional research, IT, and faculty experts to help oversee and manage AI system deployment and AI development at VCSU.
 - ii. Provide internships in local businesses wanting to implement AI applications. We will utilize existing staffing to negotiate opportunities and to coordinate, guide and assist students and the local businesses.



▶ 3. Creating Personalized Learning Pathways (\$150K)

VCSU will spearhead research initiatives to develop and implement new educational paradigms empowered by AI and learning science to enhance student learning outcomes and teaching effectiveness.

- a.** Adaptive and Personalized Learning Platforms. Harness AI and combine it with teaching and learning best practices to explore new educational paradigms that personalizes learning. For instance, some VCSU education classes are already deploying AI to allow individual student 1) voice/choice in learning pathways and 2) pace. The goal is to create a more individualized appropriate learning experience that increases engagement and maximizes the potential of each learner. While some VCSU early adopter faculty are already leveraging some of this opportunity, organizational-level change requires significant faculty development and faculty support services. Furthermore, local AI development and AI systems management is needed to combine the power of Large Language Model (LLM) chatbots with an individual user's private data while maintaining user data privacy. This involves providing training and training materials, utilizing the expertise of existing instructional design staff, faculty development, AI hardware and software.
- b.** AI-powered Tutors like chatbots will provide students with on-demand, personalized support. They can answer questions, identify areas needing improvement, and offer targeted explanations and practice exercises. Similarly, AI can provide real-time feedback while creating new content to help users refine their work. Basic capabilities are inherent in LLMs, but extending these capabilities to include students' prior private work will involve additional resources, including training, technical support, and customized prompts and potentially local AI development.
- c.** AI emotional intelligence assistance. This could be combined with AI Tutor capabilities, but these conversations would need to be kept private and not be used by the LLM, so like other student personal data used to personalize learning, this will likely need to be managed by VCSU or a vendor partner, such as "Pi".
- d.** Development hardware and software to support local AI development and AI systems management is required.
- e.** Grant writing focused on continued AI research opportunities related to teaching and learning will ensure continued funding and exploration of new educational paradigms, as well as, providing some of the operational support for the VCSU AI Institute for Teaching and Learning beyond the initial biennium. The concept is to use WEIF funding to create an immediate capacity and regionally recognized legitimacy in the 2025-2027 biennium, then reduce reliance on WEIF funding in favor of increased grant funding in the 2027-2029 biennium.



➤ **4. AI Engagement and Excellence (\$100K)**

Incentivizing AI engagement among educators, staff, and students, fostering a culture of inclusion and excellence in AI education.

- a.** Provide stipends and/or tuition scholarships for VCSU employees and K-12 Teachers engaging in AI training opportunities.
- b.** Provide AI excellence awards for various categories, e.g. VCSU Staff Employee, VCSU Faculty, K-6 Teacher, K-12 Teacher, VCSU Student, etc. A published case study will accompany each award so others can gain insight and inspiration.
- c.** Create AI certificates available as additional coursework for students. One of the certificates will be more technical for those wishing to do AI development including courses in machine learning, Python coding, etc. Another less technical certificate will include courses in prompt engineering for modern AI applications, principles of information security and social implications of computer technology. Provide full or partial tuition scholarships for learners pursuing these certificates.
- d.** Create new academic programs or tracks with significant AI components, e.g. Data Analytics and Visualization. Provide full or partial tuition scholarships for learners pursuing these new degrees. VCSU anticipates a shortage of AI professionals and recognizes the need to “grow our own” AI workforce for VCSU and the State.

5. Ubiquitous Access (\$400K)

➤ Ensuring widespread access to AI tools and resources for employees and students, leveling the playing field and promoting inclusivity in AI education.

- a.** Generative AI LLM Applications for General Work. Several VCSU strategies dictate we must have an LLM that can combine with student private data while keeping VCSU private data private. This will involve the acquisition of software.
 - I.** In VCSU testing of LLMs, ChatGPT 4.0 is the most capable public generative AI tool for general work involving data available on the internet. ChatGPT 3.1 is free and may provide a temporary solution, but it does not contain the most recent data nor the graphical, mathematical, and other capabilities of ChatGPT 4.0.
 - II.** Microsoft Copilot deployed within the NDUS Microsoft 365 (M365) environment provides AI capabilities involving data that is only available within the protected M365 environment. Data privacy rights while conducting AI queries are maintained based on what the user has rights to access within M365. VCSU has standardized on Microsoft M365, including Teams for meetings and hybrid learning. Anthology has a partnership with Blackboard to develop AI within the Blackboard LMS. In combination, these existing standards result in significant student private data that AI could leverage to achieve some of the more aggressive VCSU strategies, including personalized learning. Unfortunately, several other generative AI tools provide superior responses to general queries of data available on the internet for “AI tutor” capabilities and the private data is limited to whatever is held within M365 without either special professional services engagements,



or VCSU development using Copilot Studio or other similar tools. For budget purposes, it is anticipated Microsoft will catch up with other generative AI tools by mid-2027, so this will be the only VCSU funded application at that time. More discussions with Microsoft and Anthology may provide a roadmap regarding this perceived potential, but this does appear to be the best long-term solution given the current VCSU enterprise standards.

iii. In cooperation with the NDUS and Legal Counsel, VCSU will seek a vendor partnership and special pricing for all employees and students, including summer institute participants, in the attempt to negotiate special pricing. Available funding and vendor willingness to negotiate enterprise licensing will impact what will be supported at VCSU. Fit with educational objectives as mentioned above is the other decision point for identifying the most appropriate partnership.

iv. *As an immediate solution VCSU supports the free versions of Google Gemini, Microsoft Copilot for Chrome and Bing, and Chat GPT 3.1. These free versions are limited to general use that does not involve VCSU private or restricted data. These free versions often have limitations regarding storage of previous prompts, the number of prompts allowed, the inability to handle even mid-level mathematics, the inability to handle graphic information, and they do not contain the most recent data available. VCSU currently provides support for Microsoft Copilot within M365 for some selected employees to understand the organizational potential.

b. Local AI development and AI systems management is needed to combine the power of Large Language Model (LLM) chatbots with individual users' private data while maintaining user data privacy. Some of this type of functionality is available within Microsoft 365 when using Microsoft Co-Pilot for M365, but there are many more enterprise applications containing data that need to be leveraged with AI, especially our academic systems. VCSU will need to manage and orchestrate the data and AI capabilities from multiple systems. Some of these systems are controlled and managed by NDUS CTS, so a partnership that benefits all NDUS is anticipated. We anticipate this will require some level of database development, AI development, and middleware programming to combine the data from LLMs and VCSU private data held within multiple enterprise systems without exposing VCSU private data to the LLM. We are aware of tools and techniques that will allow VCSU or vendor partners to create this cohesive AI ecosystem, including Microsoft Copilot Studio, RAG, and others, but more research and staff development is needed to determine the best tools and techniques for VCSU. These activities require hardware, software, additional staffing, staff development for current employees, and possibly consultants.

c. Discipline Specific AI Applications. For example, we could purchase Magic School and other discipline specific AI tools for all education majors, in-service and K-12 summer institute participants. Involves the acquisition of software.

d. Enterprise Level AI Applications

i. VCSU is partnering with Freshworks to add additional AI capabilities to the VCSU "One Stop" powered by the Freshservice enterprise service management system to provide improved access to general information, forms, and AI powered tutorials. This involves additional technical staffing.

ii. Deploy extended AI capabilities within existing enterprise systems for an additional cost. We anticipate other vendors of current enterprise applications will follow the Microsoft scheme of charging extra to access advanced AI capabilities. This involves software acquisition.



- e. Laptops with GPUs (Graphics Processing Units) and NPUs (Neural Processing Units) capable of running AI applications optimized for edge computing, e.g. Adobe Photoshop AI rendering, AI programming, AI models running on the device, etc. (Hardware: VCSU Provided with Existing Funding)
- f. Increase accessibility through language translation, dictation, captioning, and conversion of content to user preferences. While inherent in LLMs, some AI technical staff time may be needed to extend these capabilities to private documents or enterprise selected systems.
- g. Provide support documentation and training for VCSU standard AI tool(s)

➤ 6. Model Institution (\$250K)

VCSU will provide AI expertise for North Dakota employees by creating a model institution for the responsible and effective deployment of AI across the entire organization, setting standards for AI integration and ethical usage.

- a. Promotion and Marketing of AI to Prospective Students. Prospective students need to “see” evidence that VCSU really is a destination that deploys AI in a different and significant way.
 - i. Deploy an AI powered Chat Bot “augmented reality” to improve enrollment and retention, especially for “after hours” assistance.
 - ii. Deploy a New Web Site with integrated Chat Bot and AI powered search.
- b. Ensure all areas of the institution have a stake in, and commitment to, the AI transformation by setting expectations, then identifying and implementing appropriate AI solutions. This might include autonomous machines for facilities services, sports biomechanics AI analysis, software and hardware for AI enhanced art and music, or other specialized AI hardware and software for a specific area. Emphasis will be given to solutions that create efficiencies or improve quality.
- c. Provide outreach presentations to showcase activities, educate, and to build empathy, awareness, and engagement.

Application Number.

19

Institution.

Williston State College

Applicant Name.

Dr. Bernell Hirning

Applicant Title.

President

Applicant Department.

Office of the President – Williston State College

Project Title.

WSC Healthcare Training Programs

Briefly describe the proposed project.

WSC assessed healthcare sector needs in western ND and learned that providers had a significant need for a trained workforce to deliver services in western ND to serve the growing population to keep oil and gas flowing for all of ND. The amount of available trained healthcare workers in the current workforce and pipeline does not meet current and future needs. In addition, the current workforce is transient and aging. These factors require that WSC invest in creating this health care training initiative with 15 new programs. WSC received funding from the State Legislature to build a Healthcare Training Facility on the campus of WSC to add new academic programs. WSC is adding 15 new healthcare programs and requires start-up dollars to create and launch these programs. While we received \$1.49 million from the 2025 legislature for seed money to begin the work to add these programs, the \$1.50 million requested is to fully launch these 15 new programs.

Does the proposal meet the statutory guidance of N.D.C.C. 15-10-75?

Yes

Indicate which statutory objective this proposal will advance (as required by N.D.C.C. 15-10-75).

Curriculum Development; Equipment & technology purchases; Hiring and training new and existing instructors; Education program promotion; Enhancement of postsecondary partnerships with primary and secondary schools

Briefly describe how the funds will advance the objectives.

1. Curriculum Development: the funds will be used to secure faculty and a healthcare training coordinator to not only develop the academic programs but also gain accreditation and certifications for the programs.
2. Equipment and Technology Purchases and Installation: Equipment and technology will be purchased

to support the new programs and students.

3. Hiring and training New and Existing Instructors: To acquire and maintain accreditation, several programs being added require full-time faculty.
4. Educational Program Promotion: Funds will be utilized to assist the marketing department in promoting the 15 new programs in western North Dakota, eastern Montana, and southern Canada.
5. Enhancement of Dual Credit with Regional Schools: WSC will grow and expand its dual credit with regional schools and CTE centers to add opportunities in healthcare to high school students. Currently, WSC is already offering degree and certificates in CTE centers in Watford City and Williston.

When will the proposed project be ready to admit students?

Fall 2025

Amount of funding requested.

\$1,500,000

What other sources of funding or resources support the proposed project?

WSC received \$1.49 million from the 2025 legislature as a small portion of the funding needed to stand up 15 total programs. WSC is partnering with the following providers: CHI St. Alexius has offered lab space for the Surgical Technician program, McKenzie County Health has offered space for the Radiography Technician program, the Williston Fire Department has offered assistance in the EMT and Paramedics programs, and Williams County Emergency Management has offered assistance with simulation programs.

Which identified workforce development need will this project address?

Health care providers in western North Dakota are unable to sustain or add needed services for the current population or future growth. The region is continuing to experience significant growth. For example, in the past year, Williston expanded by about 1,000 new citizens. As highlighted in UND School of Medicine's Eighth Biennial Report 2025 on Health Issues for the State of North Dakota, a robust healthcare system is critical to sustain and grow the economic engine that is Western North Dakota's energy sector.

What are the project's metrics for success? How will these metrics be achieved?

The full launch of each of the 15 new health care programs.

How does the project support student retention in North Dakota to meet the needs of local industries?

All new programs will be delivered in person on the WSC campus. This will enable students to be trained in the area and not have to relocate for training. This will provide stability to the population of the region and encourage the area's locally trained students to remain in the region. The on-campus in-person format of the programs will not compete with similar programs of other system campuses.

How are the students supported by this project prepared to enter the workforce with minimal additional on-the-job training?

Extensive discussion with area providers guided the development of this initiative. Further, partnerships with many providers as described above equip students with training at their potential future employers' sites. State-of-the-art immersive simulation will support many of the programs. The new health care training facility is a special-use building, designed with the latest innovation in delivering content for this sector.

Are there private sector partners in creating/offering the project?

WSC is partnering with the following providers: CHI St. Alexius has offered lab space for the Surgical

Technician program, McKenzie County Health has offered space for the Radiography Technician program, the Williston Fire Department has offered assistance in the EMT and Paramedics programs, and Williams County Emergency Management has offered assistance with the immersive simulation programs.

Is this project offered in partnership with another NDUS institution?

Some of the new care programs will offer a bachelors completion program in partnership with some of the four-year universities in NDUS. Additionally, the building delivering these programs has distance education capabilities that will allow WSC to share courses or programs with other two-year and four-year institutions in the system.

Does this project support a program already approved per SBHE policies and NDUS procedures?

Yes

Describe how the project is novel and innovative.

The healthcare training initiative is a comprehensive launch of programs, supported by the state-of-the-art technology, and broadly supported by providers in the area as well as the community. The development of these programs is directly tied to the ongoing sustainability and growth of North Dakota's economy. The importance of this initiative is clearly identified in the UND School of Medicine's Eighth Biennial Report on the State of Health Issues in the state of North Dakota.

How will the project be sustained after WEIF Grant funding is expended?

It will take time for these programs to become self-sustaining. Given the need for a highly trained, skilled healthcare workforce, it is critical to initiate and sustain these programs. WSC will continue to engage our community partnerships we've developed thus far, deploy tuition growth from new enrollment to the programs, as well as deploy the additional funding that will accrue to WSC as the funding formula catches up to the significant enrollment growth WSC has been experiencing.

How will the project adapt over time to changing workforce needs and technological changes?

The program offerings are built in modular formats that allow WSC to adapt to them as training needs evolve. Given WSC's close relationships with the health care sector, WSC will be in step with understanding changing needs. WSC will increase, decrease, or eliminate programs as needed.