

Proposal, American Rescue Plan Act for North Dakota

Accessible Computing and Cyber Science Education in North Dakota

Dakota Digital Academy

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Dakota Digital Academy Project Overview

Total Project Request - \$475,000

Expertise in computing and cyber sciences are of extremely high importance and demand in literally all private and public sector organizations and enterprises in North Dakota and beyond. Digitization of the economy and the special need for cybersecurity expertise produces workforce needs in the primary sectors of the economy, including energy, agriculture, government, services, health, transportation and medicine. The Dakota Digital Academy (DDA) was founded in the fall of 2020 to meet these needs. A priority of the DDA is to serve learners and job seekers who are unemployed, place bound or isolated due to the pandemic or personal circumstances; who wish to upgrade their skills while on the job; reinvent their career; or who want to get a start in a technology career. Because the DDA spans all 11 institutions in the university system, expertise and capacity throughout the system is greatly leveraged.

The funding of this proposal would solidify and advance the delivery of initiatives and programs currently underway while taking steps to achieve multiple goals going forward. Two issues of the Dakota Digital Review will be produced annually, which educates students and professors in non-cyber disciplines and the general public about digitization and its consequences. Under the proposed project, the educational programs, which the DDA has already started, will be made fully operational, new programs designed and launched, and advisory boards will be established. Measurable results will be realized in terms of filling jobs, stimulating economic development, significantly increasing the numbers of skilled people in cybersecurity and related areas, especially through helping people impacted by the pandemic by greatly improving their access to quality education and training needed in the digital age.

Project Goals, Tasks and Outcomes

The project has seven broad goals, each of which is of high importance in North Dakota and elsewhere. Achieving the goals will require the completion of multiple associated tasks:

Goal 1. Elevate enrollment in credentialing programs. The DDA first initiated multi-campus certificate programs in cybersecurity and in software development. As designed and developed by the DDA, these undergraduate certificate programs are comprised of 16 – 18 credits and follow a competency-based model. Many of the course development activities already funded by the DDA fit with the certificate programs. In addition, on the individual campuses of the university system, there are alternative courses that also meet specific elements of these competencies. Approvals by the Academic Program Officers at the campuses are in place. The associated articulation agreements are already approved in several cases. The mapping of these courses into certificate competencies means that individual students can freely mix and match the DDA specific courses and courses already in place that are deliverable remotely from the 11 campuses to earn a certificate credential. The result is a powerful and unprecedented way for

individual students to learn employable skills and earned a workforce-ready credential in a timely manner, independently of their individual situation or the campus which they attend or wish to gain admission.

Goal 2. Fully establish and engage the DDA Workforce Advisory Council (WAC). This council will have a responsibility to provide employer perspectives on the traits and skillsets that they look for in employees hired into computing and cyber sciences positions. This kind of insight will be invaluable in ensuring that the programs initiated and advanced by the DDA will produce students who are immediately employable and fully responsive to the needs of their employers. Members of the council will be mid-level experienced professionals with technical expertise. Initial steps have been taken to establish the WAC, and several industry leaders have already committed to serve. The structure and launching of the council can be done relatively quickly but will require some focused effort to do so.

Goal 3. Establish the DDA Board. This board will consist of a relatively small number of professionals who have high-level responsibility in their organizations. In addition to representatives from organizations that provide computer and internet services, it will be important to have representation from companies from varied sectors of the economy for which digitization is a key element of their strategic future. Members of this board will be empowered to provide high-level support and engage in partnerships with the DDA, helping to move the DDA into a truly private-public type of entity.

Goal 4. Fully develop a comprehensive DDA portal. Although the DDA has developed an informative website, much more can and should be done to create a true portal. In coordinating access to substantially diverse resources, consistent interfaces are necessary. Prospective students should be able to register for courses, special events, workshops and boot camps through the portal, easily and accurately. The design structure should be such that it can be readily maintained and updated. The current site is available at <https://dda.ndus.edu/>.

Goal 5. Support the Dakota Digital Review (DDR). DDR is the DDA's biannual magazine, which covers the cyber sciences and the social, ethical, legal and policy implications of digitization, as well as impacts on the humanities and the arts. DDR is written for the general educated reader, both within higher education and throughout our society. It is vitally important that North Dakotans understand how digitization impacts their individual, family, social and professional lives. DDR contributors include award-winning journalists and authors but mostly are NDUS professors. As well, students, alumni, business and community leaders and experts are encouraged to submit articles. DDR also provides a forum for civil discussions of challenging issues all along the political spectrum—although DDR is a rigorously non-partisan publication. DDR's second issue will be published early this fall. Going forward, DDR will be published twice yearly, while we work towards three times per year. DDR is professionally edited, beautifully illustrated, and available in print and online at <https://dda.ndus.edu/news-events/dakotadigital-review/>.

Goal 6. Establish sponsored special events. The DDA ambitiously intends to sponsor several kinds of special events, including a virtual career fair, which would showcase career opportunities offered by various companies and other employers, and help to match students with jobs. Other examples include special workshops and short courses for the public, invited speaker presentations and conferences.

Goal 7. Develop the pool of affiliated and credential course instructors. From within the North Dakota University System, 15 faculty members comprise the Technical Advisory Council. Twenty-six faculty members were funded to design and develop specific courses for remote delivery. These faculty members are the initial pool of DDA-affiliated faculty members who are poised and ready to deliver courses through the DDA. In addition, there are already several credentialed experts who have already agreed to

serve as DDA adjuncts. Some of the early adjunct commitments come from highly skilled professionals working in cybersecurity for prominent private corporations. As the DDA builds, it will be of high importance to build this affiliated faculty pool. The value of the public/private partnership approach of the DDA will be facilitated through the engagement of professionals in the adjunct program.

Connection with ARPA Guidelines

The proposed project fulfills ARPA guidelines in the following ways:

1. The population of North Dakota is highly dispersed, making it difficult for many residents to access education and training programs in person at facilities near where they live. The Covid-19 Delta variant is also significantly impacting these communities. A key DDA objective is to provide access to programs that serve these populations well. The project will specifically assist people who are disadvantaged due to their low-incomes, geographically location and the scope of the pandemic. The K-12 connection will help people in resource-poor school districts.
2. A fundamental principle of the DDA is the commitment to engage educational and training expertise in digital-related areas independent of time and place, and to make that expertise widely available. Although easy to state, this principle is often not followed by established institutions that can view other institutions as competitors. A major DDA accomplishment is establishing meaningful cooperation among the institutions in North Dakota for remote delivery of courses, articulation and transfer agreements. This helps to ease the local in-residence “brick and mortar” mentality that still exists. Through the DDA, a student at a small community college can assemble a certificate in cybersecurity by taking courses under DDA auspices from multiple sources in timeframes that work for their individual situation. Also, the DDA’s commitment to stackable credentials means that the student can then pursue additional credentials and apply their credits toward higher level degree programs.

Budget and Justification

One-time funding for the purpose of defraying DDA expenses for the 2021-22 biennium, beginning July 1, 2021, and ending June 30, 2023.

Item	Allocation
DDA Director, 19 hours per week, 104 weeks (a)	118,560
DDA Director of Social and Ethical Implications and Editor, Dakota Digital Review, 19 hours per week, 104 weeks (b)	118,560
DDA Director of Operations, 15 hours per week, 96 weeks (c)	50,400
DDA Webmaster, 15 hours per week, 104 weeks (d)	54,600
Operating costs (e)	72,880
Student support, scholarships (f)	60,000
Total, first two years	475,000

Budget total over 2 years is 475,000

Budget Justification

- (a) The Director has overall responsibility for the planning, execution, reporting, and strategy of the programs and activities of the DDA. Payment rate = \$60/hour with no benefits.
- (b) The Director of Social and Ethical Implications and Editor of the Dakota Digital Review produces two issues annually of the periodical. Payment rate = \$60/hour with no benefits.
- (c) The Director of Operations will begin their work on September 1, 2021. Primary responsibilities involve the coordinating operational details involving such things as communication, registration and publicity for the course delivery, events and special activities of the DDA. Payment rate = \$35/hour with no benefits.
- (d) The Webmaster has responsibility for the design, development, maintenance and data input for the DDA portal. This includes coordination and linkages with multiple other sites at the DDA partner institutions. Payment rate = \$35/hour with no benefits.
- (e) Operating costs include preparation, printing and circulation of the DDR periodical, as well as travel and the costs of promoting and sponsoring special events, such as career fairs, workshops and invited speakers.
- (f) Student support and scholarships accomplish a very direct linkage with purposes of the ARPA program to assist people who have been impacted by the pandemic or are otherwise disadvantaged. Awards will be made by a committee consisting of the DDA Executive Committee augmented by representatives of the Workforce Advisory Council. The programs of the DDA are structured so that students who enroll in them qualify for federal financial aid. FAFSA qualification will be a factor. Loan support through the Bank of North Dakota is anticipated. Steps will be taken to ensure that all students who receive financial support for participation in the programs of the DDA will have the combination of academic promise, motivation and need that merit investment for the betterment of North Dakota in computing and cyber sciences.