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| S:\Communications\Logos and photos\SDBORLogos\final_sdbor_webreadyBW_trans.gif | **SOUTH DAKOTA BOARD OF REGENTS**  ACADEMIC AFFAIRS FORMS |
| Intent to Plan for a New Program |
|  |  |

Use this form to request authorization to plan a new baccalaureate major, associate degree program, or graduate program; formal approval or waiver of an Intent to Plan is required before a university may submit a related request for a new program. The Board of Regents, Executive Director, and/or their designees may request additional information. After the university President approves the Intent to Plan, submit a signed copy to the Executive Director through the system Chief Academic Officer. Only post the Intent to Plan to the university website for review by other universities after approval by the Executive Director and Chief Academic Officer.

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| **UNIVERSITY:** | **DSU** |
| **DEGREE(S) AND TITLE OF PROGRAM:** | **BS in Cyber Leadership and Intelligence** |
| **INTENDED DATE OF IMPLEMENTATION:** | **Fall 2018** |

**University Approval**

*To the Board of Regents and the Executive Director: I certify that I have read this intent to plan, that I believe it to be accurate, and that it has been evaluated and approved as provided by university policy.*

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| C:\Users\slaughts\AppData\Local\Microsoft\Windows\INetCache\Content.Word\Dr. McKay Signature.jpg |  | 1/27/2018 |
| President of the University |  | Date |

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1. **What is the general nature/purpose of the proposed program?**

Dakota State University (DSU) requests authorization to plan a Bachelor of Science in Cyber Leadership and Intelligence. Cyber Leadership and Intelligence is an interdisciplinary program that provides students with knowledge of cyber systems while also educating them about world cultures, international politics, human behavior, and leadership. The graduates will lead efforts to defend organizations from cyber disruption by various kinds of criminals, non-state actors, or nations. All three degrees will be offered on the Madison campus and online.

DSU has degree programs in Cyber Operations and Network and Security Adminsitration. Cyber Operations is designated by the Natinal Security Agency as a Center of Academic Excellence. The Cyber Operations degrees are highly technical and specialized and serves positions needed by very specific aspects of the federal government. However as the profession develops and becomes in greater demand across the economy, we see a need to lead and manage such specialties, and lead work within a wider variety of organizations that seeks to understand network security in a more comprehensive manner. In our discussions with local, regional, and national leaders in the network security field, they agree that knowledge of world affairs, human behavior, and foreign languages would be a great asset for their company or organization. In fact, for the long term need, they see this degree as being better suited than the very focused Cyber Operations curriculum, where only state and federal entities use those skills to the fullest. Furthermore, this degree program will provide professionals able to begin careers in a wider federal, state, and local governments; commercial entities; and non-profit organizations. Based on these discussion, we wish to establish this degree program.[[1]](#footnote-1)

The Cyber Leadership and Intelligence program is responding to a national need for professionals educated in computer security, attribution of computer network and cyber attacks (attribution meaning the who and why of the cyber attack), and the active defense of cyber networks for public and private organizations. The National Center for Education Statistics would place this degree program within the broader Homeland Security rubric with a CIP Code of 43.0116 or “Cyber Computer Forensics and Counterterrorism.” To understand terrorism, course work will be done to educate students on different cultures and political systems giving the student a richer understanding of the politics, war, diplomacy, terrorism and criminal networks.

1. **What is the need for the proposed program (e.g., Regental system need, institutional need, workforce need, etc.)? What is the expected demand for graduates nationally and in South Dakota (provide data and examples; data sources may include but are not limited to the South Dakota Department of Labor, the US Bureau of Labor Statistics, Regental system dashboards, etc.)?**

We’ve seen a greater need to provide students an ability to attribute cyber attacks. Doing so requires an understanding of foreign cultures, global trade, governmental security organizations and US foreign policy making and the nature of international organizations.

The US government, the 50 state governments, large and medium size corporations, the

military, including the National Guard and Reserve, all demand people educated with this type

of degree. The national job outlook for Information Security Analysts is very strong. The

Bureau of Labor Statistics forecasts an increased need of 28,400 more professionals will be needed in the United States by 2026. The primary purpose for introducing this program

is workforce development as the United States anticipates dramatic workforce demand in cyber

security professionals. Information Security Analysts who analyze threat data and write

report/communicate results have a median pay of $92,600 per year.[[2]](#footnote-2) In South Dakota, the current

number of positions is 210 and growing with an average wage of $79,000 - $88,000.[[3]](#footnote-3)

DSU data in the last three years for students in cyber operations shows that of the 35 graduates, 58% remained in SD while for the AS in network and security administration there were 11 grads, 93% of those remained in SD, and for the BS in network and security administration, 20 or 75% of grads remained in SD. Overall placement rates for the three degree programs was 97.7%.

Large online universities could reach into South Dakota and offer similar programs along these lines, however, our program is somewhat unique. Examples include Embry-Riddle University in Arizona and Florida. Embry-Riddle has 96 BS on-campus degree seeking students enrolled according to their website consumer information.

1. **How would the proposed program benefit students?**

Adding BS a program in Cyber Leadership and Intelligence will provide an opportunity for either aspiring business or technology professionals to augment their skills for computer forensics; anticipate the national, state, and local demand for infrastructure protection, and to understand who and why cyber attacks are happening in order to more effectively counter them. It deals with a real threat in our modern, knowledge-based economy and serves as another program which integrates technology across multiple disciplines. Furthermore, it will begin to develop leadership skills and talents for this emerging and critical profession that may be put to good use in a wide variety of professions and industries. The need for leadership and management related degrees in South Dakota is strong. Since FY 2011, management degrees currently in the SD BOR system tend to do well in a wide variety of industry placement and salaries. Looking at the undergraduate placement rates in the degree programs Business, Business Administration, Business Management, Industrial Management, and Management Information Systems show an in-state placement rate of 59% - 69% and a salary range of $31,772 - $45,651 per year.[[4]](#footnote-4) We would anticipate this program’s demand to be higher than traditional management degrees due to the knowledge students will have regarding technical security matters. In short, this program will provide students strong career options in many professions, as they will be conversant in the information system security tools necessary for a wide variety of jobs and industries that nevertheless have a growing requirement for technical knowledge and understanding.

South Dakota currently does not produce cyber security graduates of this nature. This kind of degree is far less strictly defensive or offensive in nature, as it will assist government leaders, corporation executives, states and localities by developing anticipatory strategies and focus on likely sources of attacks. Graduates are necessary to fill jobs at the federal, state, local and corporate levels:

***Federal –*** On the federal level, the government’s law enforcement, military, and intelligence departments are the source of the guidelines which oversee our country’s various cyber security operations at both state and local levels.

Employees work throughout the country and around the world for the Department of Defense at military bases and the agencies under its authority, including:

* US Cyber Command, and the subordinate armed services Cyber commands
* U.S. Customs and Border Protection
* U.S. Citizenship and Immigration Services
* U.S. Immigration and Customs Enforcement
* Transportation Security Administration

Working for these agencies often requires a security clearance, which can typically only be obtained by U.S. citizens who meet specific guidelines.

***Employment outlook State –*** At the state level, information technology, homeland security and law enforcement agents, financial services, and related fields where such graduates could find work are expected to increase. The U. S. Department of Labor estimates an increased need of Computer System Analysts of 2.4% and of Information Security Analysts of 10.3% in South Dakota by 2026.[[5]](#footnote-5) Furthermore, as these graduates’ careers develop, we see them becoming Computer and Information Systems Managers, a career field that in South Dakota is predicted to have an increasing demand of 5.4% and a wage of $126,840.[[6]](#footnote-6)

***Employment outlook National*** – The U.S. Department of Labor estimates a national need increasing to 96,500 Management Analysts, Information Security Analysts by 28,400; and 43,800 more Computer & Information Systems managers by 2026 are predicted. The overall category of “computer and mathematical occupations” is projected to grow nationally by 13.5%.[[7]](#footnote-7)

1. **How does the proposed program relate to the university’s mission as provided in South Dakota Statute and Board of Regents Policy, and to the current Board of Regents Strategic Plan 2014-2020?**[[8]](#footnote-8)

SDCL 13-59-2.2 identifies the primary mission of DSU as providing “instruction in computer management, computer information systems, electronic data processing, and other related undergraduate and graduate programs.” In addition, Board of Regents Policy 1:10:5 authorizes DSU to offer “undergraduate and graduate programs that are technology-infused and promote excellence in teaching and learning. These programs support research, scholarly and creative activities and provide service to the State of South Dakota and the region.”

Cyber Security defense often involves technology (either directly or indirectly). Dakota State University’s mission is to integrate technology into each academic discipline, and this unique program is another step in fulfilling DSU’s mission.

The SDBOR Strategic Plan 2014-2020 includes the following vision statements:

* South Dakotans will have increased access to continuing education opportunities needed to upgrade their credentials while remaining in the workforce;
* South Dakota will have a working-age population with advanced levels of education needed to support our democracy and the modern, knowledge-based economy; and
* South Dakota will be a recognized national leader in the use of information technology to enhance its educational, economic, social, scientific, and political development.

The Strategic Plan also mentions the need to attract out-of-state students as high school enrollments in South Dakota are not projected to grow. For several years, we have seen this occurring and this Fall, DSU had students from all 50 states with nearly half of the new freshman class being from out of state. Cyber Leadership and Intelligence is a unique, innovative program that fits nicely with other DSU nationally recognized programs. Dakota State is already a NSA and DHS National Center of Academic Excellence in Education, Research and Cyber Operations and this academic program fits nicely with an existing partner: DHS. With the construction of the Cyclops, PATRIOT, and other commercial partner labs within the Madison Cyber Labs, we expect a growing demand in Madison and the state for exactly these kinds of graduates.

Other areas mentioned in the Strategic Plan include:

*Goal 1: Student Success* – Reflecting rates of growth in total graduates over the last five years, grow degree production to 7,450 per year by 2020.

Intended Outcomes:

• Grow the number of undergraduate and graduate degrees awarded.

*Goal 3 -* *Research and Economic Development* - Increase annual system research and contract expenditures to $150M by 2020 to advance knowledge, enhance technology transfer, commercialization, and catalyze economic development.

*Action Steps:*

Economic Development – Contribute to the state’s workforce and economic development.

• Encourage development of academic programs and certificates that align with existing and future state workforce needs.

The BS program intends to graduate students to contribute to longer range goals of increasing undergraduate degrees awarded. BS degree recipients would graduate as early as 2022-23. Our goal would be to have 40 students complete their BS degree by 2025.

1. **Do any related programs exist at other public universities in South Dakota? If a related program already exists, explain the key differences between the existing programs and the proposed program, as well as the perceived need for adding the proposed new program. Would approval of the proposed new program create opportunities to collaborate with other South Dakota public universities?**[[9]](#footnote-9)*If there are no related programs within the Regental system, enter “None.”*

None.

1. **Do related programs exist at public colleges and universities in Minnesota, North Dakota, Montana, and/or Wyoming?** *If a related program exists, enter the name of the institution and the title of the program; if no related program exists, enter “None” for that state. Add additional lines if there are more than two such programs in a state listed.*[[10]](#footnote-10)

|  |  |  |
| --- | --- | --- |
|  | **Institution** | **Program Title** |
| ***Minnesota*** | None |  |
| ***Montana*** | None |  |
| ***North Dakota*** | None |  |
| ***Iowa*** | None |  |
|  |  |  |
|  |  |  |

1. **Are students enrolling in this program expected to be new to the university or redirected from other existing programs at the university?**

We anticipate the majority of students will be new to the university but that some students would change their major internally, which is consistent with other degree programs. Our goal would be to have 10-15 total students enroll yearly until the programs can become established and effectively marketed.

1. **What are the university’s expectations/estimates for enrollment in the program through the first five years? What are the university’s expectations/estimates for the annual number of graduates from the program after the first five years? Provide an explanation of the methodology the university used in developing these estimates.**

As noted above, our goal would be to have an average of approximately 10-15 students enroll yearly while the program becomes established and appropriate marketing has been done. As is consistent with both the cyber operations and network and security administration programs, students will be both new to the university as well as students changing their major. The 15 students per year enrollment is consistent with the fall 2017 enrollment for the network and security administration program which had 15 incoming students enroll in the AS and BS degree programs and another 20 students transfer in. The fall enrollment for cyber operations, which is the largest program at DSU was 91 incoming students and 73 transfer students, (55 of those 73 are off-campus). Due to DSU’s brand recognition, we will be able draw enough enrollment to meet the program productivity requirement of five graduates per year or 20 graduates over five years by year 7 of the programs.

1. **Complete the following charts to indicate if the university intends to seek authorization to deliver the entire program at any off-campus location (e.g., UC Sioux Falls, Capital University Center, Black Hills State University-Rapid City, etc.) or intends to seek authorization to deliver the entire program through distance technology (e.g., as an on-line program)?**[[11]](#footnote-11)

|  |  |  |  |
| --- | --- | --- | --- |
|  | **Yes/No** | ***If Yes, list location(s)*** | ***Intended Start Date*** |
| **Off-campus** | No |  | Choose an item.Choose an item. |

|  |  |  |  |
| --- | --- | --- | --- |
|  | **Yes/No** | ***If Yes, identify delivery methods*** | ***Intended Start Date*** |
| **Distance Delivery** | Yes | online | **Fall 2019** |

1. **What are the university’s plans for obtaining the resources needed to implement the program?** *Indicate “yes” or “no” in the columns below*.

|  |  |  |
| --- | --- | --- |
|  | Development/Start-up | Long-term Operation |
| Reallocate existing resources | Yes | Yes |
| Apply for external resources | No | No |
| Ask Board to seek new State resources[[12]](#footnote-12) | No | No |
| Ask Board to approve a new or increased student fee | No | No |

Depending on curriculum design, we anticipate this program may require a full-time political science faculty member with a specialty in International Relations. Because these new students can take general education courses and other introductory courses in their freshmen year, we would anticipate bringing this faculty member aboard beginning either fall 2019 or spring 2020. Currently, we see no need to hire more than one new faculty member in the first 2-5 years, even if enrollment growth is stronger than estimated here. In that the course load can be accommodated with existing faculty with the exception of the one new faculty with international relations “intelligence” experience.

1. **Curriculum Example: Provide (as Appendix A) the curriculum of a similar program at another college or university.** *The Appendix should include required and elective courses in the program. Catalog pages or web materials are acceptable for inclusion*. **Identify the college or university and explain why the selected program is a model for the program under development**.
2. **Additional Information:** *Additional information is optional. Use this space to provide information not specifically requested above. Delete this item it is not used.*

**Appendix A**

Similar Program: Embry Riddle University, Prescott, AZ[[13]](#footnote-13). The Embry-Riddle Program below is classified with CIP 45.0901 International Relations and Affairs. Because the Cyber Leadership and Intelligence degree is interdisciplinary and we will offer students a foundation of computer forensics, along with world affairs curriculum, the degee program below is closest to our thinking. However we would still use the Homeland Security based CIP 43.0116. Since our curriculum would vary significantly from this closest example we have in addition added a draft of our new curriculum as well.

Suggested Program of Study

|  |  |  |
| --- | --- | --- |
| **Freshman Year** | | |
|  | | **Credits** |
| BA 201 | Principles of Management | 3 |
| COM 122 | English Composition | 3 |
| LCH 103 | Chinese I and II | 6 |
| LCH 203 | Chinese III and IV | 6 |
| SIS 100 | Introduction to Global Security | 3 |
| SIS 210 | Security Fundamentals | 3 |
| SS 120 | U.S. History | 3 |
| UNIV 101 | College Success | (1) |
|  | **Credits Subtotal** | **27.0** |
| **Sophomore Year** | | |
| BIO 104 | Foundations of Biology I | 4 |
| LCH 206 | Contemporary Chinese Literature | 3 |
| LCH 209 | Computer Communication and Applications in Chinese | 3 |
| LCH 303 | Intermediate Chinese I and II | 6 |
| PSY 101 | Introduction to Psychology | 3 |
| SIS 200 OR  SS 290 | Introduction to the U.S. Legal System OR  History of Modern Europe | 3 |
| SIS 220 | Investigative Methodology and Forensic Science | 4 |
| SS 320 | Government of the U.S. | 3 |
|  | **Credits Subtotal** | **29.0** |
| **Junior Year** | | |
| COM 223 | Intelligence Writing | 3 |
| EC 210 OR  EC 211 | Microeconomics OR  Macroeconomics | 3 |
| LCH 205 | Modern Chinese Films | 3 |
| LCH 306 | Asian Literature | 3 |
| MA 120 OR  MA 140 | Quantitative Methods I OR  College Algebra | 3 |
| PSY 306  PSY 313 | Deceptions OR  Personality and Profiling | 3 |
| SIS 315 | Studies in Global Intelligence I | 3 |
| SS 327 | International Relations | 3 |
| SS 340 | Modern U.S. Foreign Policy | 3 |
|  | **Credits Subtotal** | **27.0** |
| **Senior Year** | | |
| LCH 400 | Eastern and Western Civilization | 3 |
| LCH 420 | Senior Review | 3 |
| MA 222 | Business Statistics | 3 |
| SIS 415 OR  SIS 470 OR  SIS 475 | GSIS Senior Capstone Course OR  Senior Cooperative Internship OR  Senior Thesis | 3 |
|  | Area of Concentration Courses | 15 |
|  | Open Elective | 3 |
|  | **Credits Subtotal** | **30.0** |
| **Summer Session** | | |
|  | Summer Study Abroad between Sophomore and Junior years | |
| LCH 207 | Introduction to Geography | 3 |
| LCH 208 | Speech in Chinese | 3 |
| LCH 402 | Applied Cross-Cultural Communications | 3 |
|  | **Credits Subtotal** | **9.0** |
|  | **Credits Total:** | **122.0** |

GSIS Chinese track students in Air Force or Army ROTC may substitute SS 120 with SS 311 or SS 321, and BA 201 with an Upper-Level AF or MSL course.

Our current draft of our program would look something like what follows below:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Pref.**  **CLI** | **Num.** | **Title**  **Cyber Leadership and Intelligence** | | **Cr. Hrs.** |
| System General Education | | | | 30 |
| Foundations (all students) | | | | 33 |
| CLI  CSC  CSC  CSC  CIS  CSC  ENGL  XXX  POLS  XXX  XXX | 101  105  123/150  145/245  321  363  212  XXX  350  XXX  XXX | Introduction to Cyber Security Leadership (New course to SDBoR)  Introduction to Computers  Problem Solving and Programming / Computer Science I  Cyber Security Fundamentals  Information Security Management  Hardware, Virtualization, and Data Communications  World Literature II  Any 200 – 400 Social Science  International Relations (New course to DSU)  Any 200 - 400 Social Science  Any 300 – 400 Humanities | |  |
| Track A (Students chose either this track OR Track B below) | | | 18 | |
| CSC  CSC  CSC  CSC  CSC  CSC | 250  328  383  385  388  418 | Computer Science II  Operating Environments  Networking I  Networking II  Computer Forensics Fundamentals  Advanced Computer Forensics | |  |
|
| Track B (Students chose either this track or the Track A above) | | | 18 | |
| *SPCM*  *ENGL*  *SOC/ANTH*  *HIST*  *POLS*  *POLS* | *XXX*  *XXX*  *XXX*  *XXX*  *440*  *456* | Any 200 – 400 SPCM course  Any non-American Literature course  Any 300 – 400 Social Science  Any 300 - 400 Social Science  Comparative Government (New course to DSU)  International Political Economy (New course to DSU) | |  |
| Cyber Leadership (All students) | | | | 12 |
| CLI/PHIL  BADM  CLI  HIST | XXX  360  410  488 | Cyber-Ethics (new course to SDBoR)  Organization and Management  Cyber Leadership (New course to SDBoR)  Introduction to Grand Strategy | |  |
| Internship |  |  | | 3 |
| Electives |  |  | | 24 |
| **Total** |  |  | | **120** |

1. Our discussions have included the Chief Information Officer for East River Electric, the Chief Information Security Manager for Applied Materials, current and former officials of the Defense Intelligence Agency to include the former Deputy Director, the former Chief Information Officer (or G-6) of the United States Army, former counter-terrorism staff members of President George W. Bush’s National Security Council who is now actively involved in establishing the commercial framework for the “Hyper Loop” transportation network, and current senior leadership of FBI cyber security investigations office. Many of these people have agreed to support this program by serving on an advisory board, in the event the Board approves of the final degree program. [↑](#footnote-ref-1)
2. Bureau of Labor Statistics, US Department of Labor, *Occupational Outlook Handbook*, Information Security Analysts, on the Internet at <https://www.bls.gov/ooh/computer-and-information-technology/information-security-analysts.htm> (visited November 28, 2017). [↑](#footnote-ref-2)
3. Projections Central – State Occupational Projections, Short Term Occupational Projections, South Dakota, Information Security Analysts, on the Internet at <http://www.projectionscentral.com/Projections/ShortTerm> (visited January 23, 2018). [↑](#footnote-ref-3)
4. South Dakota Board of Regents, Graduate Placement Dashboard. <https://www.sdbor.edu/dashboards/Pages/GraduatePlacement.aspx> (visited December 22, 2017.) [↑](#footnote-ref-4)
5. Bureau of Labor Statistics, U.S. Department of Labor, Occupational Outlook Handbook, Infromation Security Analysts, on the Internet at: <https://www.bls.gov/oes/current/oes_sd.htm#15-0000> (visited November 28, 2017). [↑](#footnote-ref-5)
6. Bureau of Labor Statistics, U. S. Department of Labor, Occupational Outlook Handbook, Occupational Employment and Wages, May 2016. Bureau of Labor Statistics, U.S. Department of Labor, Occupational Outlook Handbook, Infromation Security Analysts, on the Internet (visited November 28, 2017) [↑](#footnote-ref-6)
7. Bureau of Labor Statistics, U.S. Department of Labor, Occupational Outlook Handbook, Infromation Security Analysts, on the Internet at <https://www.bls.gov/oes/current/oes151122.htm> (visited November 28, 2017). [↑](#footnote-ref-7)
8. South Dakota statutes regarding university mission are located in SDCL 13-57 through 13-60; Board of Regents policies regarding university mission are located in Board Policies 1:10:1 through 1:10:6. The Strategic Plan 2014-2020 is available from <https://www.sdbor.edu/the-board/agendaitems/Documents/2014/October/16_BOR1014.pdf>. [↑](#footnote-ref-8)
9. Lists of existing system programs are available through university websites and the RIS Reporting: Academic Reports database available from <http://apps.sdbor.edu/ris-reporting/AcademicProgramReports.htm>. [↑](#footnote-ref-9)
10. This question addresses opportunities available through Minnesota Reciprocity and WICHE programs such as the Western Undergraduate Exchange and Western Regional Graduate Program in adjacent states. List only programs at the same degree level as the proposed program. For example, if the proposed program is a baccalaureate major, then list only related baccalaureate majors in the other states and do not include associate or graduate programs. [↑](#footnote-ref-10)
11. The accreditation requirements of the Higher Learning Commission (HLC) require Board approval for a university to offer programs off-campus and through distance delivery. [↑](#footnote-ref-11)
12. Note that requesting the Board to seek new State resources may require additional planning and is dependent upon the Board taking action to make the funding request part of their budget priorities. Universities intending to ask the Board for new State resources for a program should contact the Board office prior to submitting the intent to plan. [↑](#footnote-ref-12)
13. Full program details can be found here: http://erau.edu/degrees/bachelor/global-security-intelligence-studies/ [↑](#footnote-ref-13)