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| S:\Communications\Logos and photos\SDBORLogos\final_sdbor_webreadyBW_trans.gif | **SOUTH DAKOTA BOARD OF REGENTS**  ACADEMIC AFFAIRS FORMS |
| New Certificate |
|  |  |

Use this form to propose a certificate program at either the undergraduate or graduate level. A certificate program is a sequence, pattern, or group of academic credit courses that focus upon an area of specialized knowledge or information and develop a specific skill set. Certificate programs typically are a subset of the curriculum offered in degree programs, include previously approved courses, and involve 9-12 credit hours including prerequisites. In some cases, standards for licensure will state explicit requirements leading to certificate programs requiring more than 12 credit hours (in such cases, exceptions to course or credit requirements must be justified and approved). The Board of Regents, Executive Director, and/or their designees may request additional information about the proposal. After the university President approves the proposal, submit a signed copy to the Executive Director through the system Chief Academic Officer. Only post the New Certificate Form 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 |
| **TITLE OF PROPOSED CERTIFICATE:** | Software Development |
| **INTENDED DATE OF IMPLEMENTATION:** | Fall 2018 |
| **PROPOSED CIP CODE:** | 11.0401 Information Science |
| **UNIVERSITY DEPARTMENT:** |  |
| **UNIVERSITY DIVISION:** | Beacom College of Computer & Cyber Sciences |

**University Approval**

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

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| Institutional Approval Signature  *President or Chief Academic Officer of the University* |  | Date |

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1. **Is this a graduate-level certificate or undergraduate-level certificate (*place an “X” in the appropriate box*)?**

|  |  |  |  |
| --- | --- | --- | --- |
| Undergraduate Certificate |  | Graduate Certificate |  |

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

The format of this certificate allows for the accumulation of a specific set of courses to constitute a degree of content mastery and provide an area of academic specialization. This certificate provides an adjunct area of study to the student’s internship or applied experience. With the ubiquitous presence of websites, mobile apps, and mission-critical data management systems, we need people prepared on every level: Pre-baccalaureate, baccalaureate, masters and doctoral level. The first and main purpose for this undergraduate certificate is to better prepare society by producing more trained computer scientists, software engineers, programmers, and other computing professionals at the pre-baccalaureate level. This certificate gives the pre-baccalaureate student in-depth, hands-on experience in the theory and application of software development, as well as practical experience.

1. **Provide a justification for the certificate program, including the potential benefits to students and potential workforce demand for those who graduate with the credential.[[1]](#footnote-1)**

Certificate programs in software development are increasingly relevant and useful as students have begun concentrating more on skills needed in the workforce. Employers, in turn, are placing more emphasis on specialized skills than traditionally valued credentials like degrees. We see this certificate as accomplishing at least five important tasks: (a) It will help create lifelong learners (as the workforce expects an increasingly diverse and changing set of skills, students are going back to school to upgrade their credentials. By basing educational programming around what students actually need, institutions can transform certificate students to lifelong learners. (b) This certificate creates educational success: Some estimates suggest one third of the people who get a certificate will go on to get a two- or four-year degree, and some people will get a certificate after they get a two- or four-year degree, so it’s flexible in that regard. (c) This certificate helps DSU better align with workforce needs: produce graduates with tangible, workforce-ready skill sets. This certificate will help students gear up for employment upon graduation, aligning their skills with what employers actually want. (d) This certificate program of study will be important to learners who are focused on workforce development and are concentrated in programs designed to prepare adult learners for specific workforce roles. (e) This certificate will help DSU meet its mission as a leader in the computer and cyber sciences.

1. **Who is the intended audience for the certificate program (including but not limited to the majors/degree programs from which students are expected)?**There are two intended audiences: (a) learners poised to graduate from high school who do not see college or other education as an immediate option; and (b) older learners who seek workforce entry or advantage after a period of time out of the educational environment.
2. **List the courses required for completion of the certificate in the table below (if any new courses are proposed for the certificate, please attach the new course requests to this form):[[2]](#footnote-2)**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Prefix** | **Number** | **Course Title**  *(add or delete rows as needed)* | **Credit Hours** | **New**  **(yes, no)** |
| CSC | 150 | Computer Science I | 3 | No |
| CSC | 234 | Software Security | 3 | No |
| CSC | 250 | Computer Science II | 3 | No |
| CSC | 260 | Object Oriented Design | 3 | No |
|  |  | Subtotal | 12.0 |  |

1. **Student Outcome and Demonstration of Individual Achievement.[[3]](#footnote-3)**
   1. **What specific knowledge and competencies, including technology competencies, will all students demonstrate before graduation**? *The knowledge and competencies should be specific to the program and not routinely expected of all university graduates.* Several competencies and intended outcomes arise from this certificate: (a) develop skills in problem solving, algorithm development, design, and programming concepts; (b) develop skills in specific topics: sequence, selection, repetition, functions, and arrays; (c) develop skills in attack methodologies and techniques that lead to software vulnerabilities, (d) learn about mitigation strategies related to filter evasion, (e) develop skills in session management and input validation; (f) learn about advanced treatment of functions, data types such as arrays and structures, and files; (g) become proficient in object-oriented programming methodologies, including the introduction of Unified Modeling Language (UML).
   2. **Complete Appendix A – Outcomes using the system form.** *Outcomes discussed below should be the same as those in Appendix A.*
2. **Delivery Location.[[4]](#footnote-4)**
3. **Complete the following charts to indicate if the university seeks authorization to deliver the entire program on campus, at any off campus location (e.g., UC Sioux Falls, Capital University Center, Black Hills State University-Rapid City, etc.) or deliver the entire program through distance technology (e.g., as an on-line program)?**

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| --- | --- | --- |
|  | **Yes/No** | ***Intended Start Date*** |
| **On campus** | Yes | **Fall 2018** |

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|  | **Yes/No** | ***If Yes, list location(s)*** | ***Intended Start Date*** |
| **Off campus** | Yes | University Center, Sioux Falls | **Fall 2018** |

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| --- | --- | --- | --- |
|  | **Yes/No** | ***If Yes, identify delivery methods[[5]](#footnote-5)*** | ***Intended Start Date*** |
| **Distance Delivery (online/other distance delivery methods)** | Yes | Online | **Fall 2018** |

1. **Complete the following chart to indicate if the university seeks authorization to deliver more than 50% but less than 100% of the certificate through distance learning (e.g., as an on-line program)? [[6]](#footnote-6)**

|  |  |  |  |
| --- | --- | --- | --- |
|  | **Yes/No** | ***If Yes, identify delivery methods*** | ***Intended Start Date*** |
| **Distance Delivery (online/other distance delivery methods)** | Yes | Online | **Fall 2018** |

1. **Additional Information:** *Additional information is optional. Use this space to provide pertinent information not requested above. Limit the number and length of additional attachments. Identify all attachments with capital letters. Letters of support are not necessary and are rarely included with Board materials. The University may include responses to questions from the Board or the Executive Director as appendices to the original proposal where applicable. Delete this item if not used.*

We see the following “stackability” for this certificate:

Cert. Software Dev. 🡪 AS in Software Dev. 🡪 BS Cyber Operations or BS Computer Science or BS Network Security/Admin

1. For workforce related information, please 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. [↑](#footnote-ref-1)
2. Regental system certificate programs typically are a subset of the curriculum offered in degree programs, include existing courses, and involve 9-12 credits for completion. Deviations from these guidelines require justification and approval. [↑](#footnote-ref-2)
3. Board Policy 2:23 requires certificate programs to “have specifically defined student learning outcomes.” [↑](#footnote-ref-3)
4. 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-4)
5. Delivery methods are defined in [AAC Guideline 5.5](https://www.sdbor.edu/administrative-offices/academics/academic-affairs-guidelines/Documents/5_Guidelines/5_5_Guideline.pdf). [↑](#footnote-ref-5)
6. This question responds to HLC definitions for distance delivery. [↑](#footnote-ref-6)