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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 |
|  |  |

|  |  |
| --- | --- |
| **UNIVERSITY:** | **DSU** |
| **TITLE OF PROPOSED CERTIFICATE:** | **Creative Coding** |
| **INTENDED DATE OF IMPLEMENTATION:** | **Fall 2020** |
| **PROPOSED CIP CODE:** |  |
| **UNIVERSITY DEPARTMENT:** | **Computer Science** |
| **UNIVERSITY DIVISION:** | **The Beacom College of Computer and 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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|  |  | 4/17/2020 |
| 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*)?**

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

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

The Creative Coding certificate provides a hands-on opportunity to explore the making of code-based interactions for the creative fields. It provides students with an opportunity to gain the skills needed to work with computer codes in practical, creative ways that will support a variety of career aspirations. Students studying Digital Arts and Design at DSU are required to take introductory computer programming courses in their plans of study. Further studies of computer programming in a creative setting deepens the artist’s ability to adapt and work with the digital tools of their trade, thus increasing their marketability. Most specifically, the studies required to earn this certificate will develop the artists ability to think algorithmically, develop computer-oriented problem-solving skills, and innovate artistically, in ways that will continue to develop throughout their professional life. This certificate will widen a student’s abilities to adapt in this every changing digital world where art is now created and communicated.

**3. Provide a justification for the certificate program, including the potential benefits to students and potential workforce demand for those who graduate with the credential.**

The job market for artists has changed dramatically, locally and globally. A traditional Fine/Performing Arts Degree, even when earned from one of the world’s top fine/performing arts schools, is not a guarantee of job placement upon graduation. While rich in tradition and artistic excellence, these institutions are remiss in training their graduates to navigate the fully present and ever-changing technological landscape of the arts and entertainment industry. While their graduates will be impacted by technology, DSU graduates will impact technology.

When looking at the tables below from South Dakota’s Department of Labor and Regulation, and the U.S. Bureau of Labor Statistics, you will see that the fine/performing job market is selective and small, with limited growth potential. This increases on the National Level, but the real explosion happens when you look at Software Development. In fact, the Bureau of Labor Statistics identified Software Development as one of the fastest growing industries of our day and tomorrow. And what’s even more exciting, is that every artistic discipline has its own industry software. Therefore, the artist’s potential job market expands dynamically when one considers Software/Hardware Development, Streaming Platforms, Internet Services, Technology applications in Education, and even design elements in commercial industries.

Applied knowledge of programming, applied in the industries of creative and artistic disciplines, offers tremendous potential for emerging artists to find sustainable and gainful employment, while still giving them the opportunity to work in their artistic discipline. Simply put, by earning a certificate or minor in creative programming, the job potentials of students graduating from the Digital Arts and Design program at DSU will increase exponentially.

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| **South Dakota** |  |  |  |  |  |  |
| **SOC Code** | **Occupational Title** | **Average Annual**  **Demand for Workers** | **2016 Workers** | **2026 Workers** | **Percentage Change from 2016-2026** | **Annual Wage** |
| 270000 | Arts, Design, Entertainment, Sports, and Media | see individual categories that follow | 8162 | 8478 | 3.87% | $28,335 |
| 271011 | Art Directors | 3 | 38 | 39 | 2.63% | $75,497 |
| 274011 | Audio and Video Equipment Technicians | 10 | 97 | 108 | 11.34% | $32.006 |
| 274012 | Broadcast Technicians | 10 | 90 | 97 | 7.78% | $34,184 |
| 271012 | Craft Artists | 3 | 46 | 47 | 2.17% | $34,955 |
| 271021 | Commercial and Industrial Designers | 10 | 96 | 101 | 5.21% | $43,951 |
| 271024 | Graphic Designers | 77 | 797 | 822 | 3.14% | $36,302 |
| 271014 | Multimedia Artists and Animators | 8 | 95 | 100 | 5.26% | $44,343 |
| 151134 | Web Developers | 32 | 365 | 411 | 12.60% | $54,409 |
| 251121 | Art, Drama, and Music Teachers, Postsecondary | 19 | 201 | 227 | 12.94% | $64,021 |
| 151132 | \*\*Software Developers, Applications | 118 | 1173 | 1514 | 29.07% | $74,998 |

\*Available from <https://dlr.sd.gov/lmic/menu_projections.aspx>.

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| --- | --- | --- | --- |
| **National U.S.** |  |  |  |
| **Occupational Title** | **2018 Median Pay** | **2018 Workers** | **Job Outlook, 2018-28** |
| Art Directors | $92,780 | 101,000 | 1% |
| Craft and Fine Artists: Craft and fine artists use a variety of materials and techniques to create art for sale and exhibition. | $48,960 | 50,300 | 1% |
| Graphic Designers | 50,370 | 290,100 | 3% |
| Industrial Designers | 66,590 | 43,900 | 3% |
| Multimedia Artists and Animators | 72,520 | 71,600 | 4% |
| Broadcast and Sound Engineering Technicians | 43,660 | 144,300 | 8% |
| \*\*Software Developers  (BLS Fastest Growing Industries) | 105,590 | 1,365,500 | 21% |

\*Available from <https://www.bls.gov/emp/tables/fastest-growing-occupations.htm> and [bls.gov/ooh](http://bls.gov/ooh)

1. **Who is the intended audience for the certificate program (including but not limited to the majors/degree programs from which students are expected)?**

It is expected that a number of DSU’s undergraduate students in Digital Arts and Design may be interested in the certificate program, and those students (or undergraduate students from other SD institutions and across the nation) will provide the bulk of the enrollments.

1. **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):[[1]](#footnote-1)**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Prefix** | **Number** | **Course Title**  *(add or delete rows as needed)* | **Prerequisite** | **Credit Hours** | **New**  **(yes, no)** |
| CSC | 150 | Computer Science I |  | 3 | No |
| CSC | 163 | Hardware, Virtualization, and Data Comm. |  | 3 | No |
| CSC | 274 | Creative Coding | CSC 150 | 3 | No |
| CSC | 374 | Interdisciplinary Coding | CSC 274 | 3 | No |
|  |  | Subtotal |  | 12 |  |

1. **Student Outcome and Demonstration of Individual Achievement.[[2]](#footnote-2)**
   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.*

Upon graduation, graduates of the program will be able to:

* innovate within creative teams in multi-faceted ways beyond their artistic capabilities:
  + communicate team ideas and project needs directly to the software engineers and development teams when working with big budgets and major production houses.
  + implement programs themselves, to realize team ideas and project needs when working with smaller production companies, or as an independent contractor.

Upon graduation, graduates of the program will be able to:

* apply problem solving techniques to develop algorithms.
* implement algorithms in a variety of programming languages and environments, including scripting and object-oriented.
* evaluate hardware requirements and capabilities
* understand the role of networking and virtualization within modern and emerging artistic enterprises.
* use computation as an expressive, analytical, critical & visualizing medium that can be applied creatively to work in a variety of digital artist media, i.e. 2D/3D graphics, image and video processing, animation, game design, and sound design.
* develop physical computing applications that integrate sensors with hardware and software computing resources, including mapping.
* use code as a method of creative expression in interactive projects, ranging from educational platforms, the entertainment industry, and extending to experimental high art installations.
  1. **Complete Appendix A – Outcomes using the system form.** *Outcomes discussed below should be the same as those in Appendix A.*

1. **Delivery Location.[[3]](#footnote-3)**
2. **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 2020** |

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

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|  | **Yes/No** | ***If Yes, identify delivery methods[[4]](#footnote-4)*** | ***Intended Start Date*** |
| **Distance Delivery (online/other distance delivery methods)** | Yes | 015– Internet Asynchronous | **Fall 2020** |

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)? [[5]](#footnote-5)**

|  |  |  |  |
| --- | --- | --- | --- |
|  | **Yes/No** | ***If Yes, identify delivery methods*** | ***Intended Start Date*** |
| **Distance Delivery (online/other distance delivery methods)** | No |  | Choose an item.Choose an item. |

**APPENDIX A**

|  |  |  |  |  |  |
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|  | **Individual Student Outcomes and Program Courses** | | | | |
| List specific individual student outcomes—knowledge and competencies—in each row. Label each column with a course prefix and number. Indicate required courses with an asterisk (\*). Indicate with an X the courses that will provide the student with an opportunity to acquire the knowledge or competency listed in the row. All students should acquire the program knowledge and competencies regardless of the electives selected. Modify the table as necessary to provide the requested information for the proposed program. | | | | | |
| ***Individual Student Outcome*** | CSC 150\* | CSC163\* | CSC274\* | CSC374\* |  |
| innovate within creative teams in multi-faceted ways beyond their artistic capabilities |  |  | X | X |  |
| apply problem solving techniques to develop algorithms | X |  | X |  |  |
| implement algorithms in a variety of programming languages and environments, including scripting and object-oriented. | X |  | X | X |  |
| evaluate hardware requirements and capabilities |  | X |  | X |  |
| understand the role of networking and virtualization within modern and emerging artistic enterprises |  | X |  | X |  |
| use computation as an expressive, analytical, critical & visualizing medium that can be applied creatively to work in a variety of digital artist media, i.e. 2D/3D graphics, image and video processing, animation, game and sound design |  |  | X | X |  |
| develop physical computing applications that integrate sensors with hardware and software computing resources, including mapping |  | X | X |  |  |
| use code as a method of creative expression in interactive projects, ranging from educational platforms, the entertainment industry, and extending to experimental high art installations | X |  | X | X |  |

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-1)
2. 3 Board Policy 2:23 requires certificate programs to “have specifically defined student learning outcomes.” [↑](#footnote-ref-2)
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-3)
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-4)
5. 6 This question responds to HLC definitions for distance delivery. [↑](#footnote-ref-5)