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|  | **SOUTH DAKOTA BOARD OF REGENTS**  ACADEMIC AFFAIRS FORMS |
| New Course Request |
|  |  |

Use this form to request a new common or unique course. Consult the system course database through for information about existing courses before submitting this form.

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| --- | --- | --- | --- | --- |
| DSU |  | **Beacom College of Computer and Cyber Sciences** | | |
| **Institution** |  | **Division/Department** | | |
| A picture containing text  Description automatically generated | | |  | 10/28/2024 |
| **Institutional Approval Signature** | | |  | **Date** |

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**Section 1. Course Title and Description**

If the course contains a lecture and laboratory component, identify both the lecture and laboratory numbers (xxx and xxxL) and credit hours associated with each. Provide the complete description as you wish it to appear in the system course database, including pre-requisites, co-requisites, and registration restrictions.

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| --- | --- | --- |
| **Prefix & No.** | **Course Title** | **Credits** |
| CSC 403 | Quantum Computing Applications | 3 |

*NOTE: The Enrollment Services Center assigns the short, abbreviated course title that appears on transcripts. The short title is limited to 30 characters (including spaces); meaningful but concise titles are encouraged due to space limitations in the student information system.*

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| **Course Description** |  |
| This course provides students with an application-based foundation in cybersecurity focused applications. Some topics and applications in quantum chemistry, physics and mathematics will be covered as well as a broad area of quantum computing and quantum information science applications. | |

*NOTE: Course descriptions are short, concise summaries that typically do not exceed 75 words. DO: Address the content of the course and write descriptions using active verbs (e.g., explore, learn, develop, etc.). DO NOT: Repeat the title of the course, layout the syllabus, use pronouns such as “we” and “you,” or rely on specialized jargon, vague phrases, or clichés.*

**Pre-requisites or Co-requisites (add lines as needed)**

|  |  |  |
| --- | --- | --- |
| **Prefix & No.** | **Course Title** | **Pre-Req/Co-Req?** |
| CSC 275 | Introduction to Quantum Computing | Pre-Req |
| MATH 201 | Introduction to Discrete Mathematics | Pre-Req |

**Registration Restrictions**

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**Section 2. Review of Course**

1. **Will this be a unique or common course (*place an “X” in the appropriate box*)?**

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|  | **Unique Course**  *If the request is for a unique course, institutions must review the common course catalog in the system course database to determine if a comparable common course already exists. List the two closest course matches in the common course catalog and provide a brief narrative explaining why the proposed course differs from those listed. If a search of the common course catalog determines an existing common course exists, complete the Authority to Offer an Existing Course Form. Courses requested without an attempt to find comparable courses will not be reviewed.* |

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| --- | --- | --- |
| **Prefix & No.** | **Course Title** | **Credits** |
| NANO 571 | Quantum Mechanics (SDM) | 4 |
| PHYS 471 | Quantum Mechanics (USD and SDSU) | 4 |
| CHEM 345 | Quantum Mechanics of Chemical Systems (SDSU) | 2 |
| *Provide explanation of differences between proposed course and existing system catalog courses below:* | | |
| CSC 483 Quantum Computing Applications bridges quantum theory with computational practices, with a focus on real-world applications in cybersecurity and computing, whereas the other courses emphasize the theoretical underpinnings of quantum mechanics within specific scientific contexts.  The proposed course primarily focuses on application-based quantum computing, particularly for cybersecurity, quantum information science, and computational problem-solving. It covers how quantum principles are applied to practical computing tasks, such as encryption and optimization. It also includes applications beyond just physics or chemistry, integrating content from mathematics, quantum information science, and cybersecurity. It also introduces how quantum computing can solve real-world challenges in various industries. | | |

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|  | **Common Course** | | | | *Indicate universities that are proposing this common course:* | | | | | | | | |
|  |  | | | |  | | | | | | | | |
|  |  | BHSU |  | DSU | |  | NSU |  | SDSMT |  | SDSU |  | USD |

**Section 3. Other Course Information**

1. **Are there instructional staffing impacts?**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | **No**. Replacement of |  | | |
|  |  | (course prefix, course number, name of course, credits) | | |
|  |  | \*Attach course deletion form | | |
|  |  |  | | |
| Effective date of deletion: | | | Click here to enter a date. |  |

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|  | **No**. Schedule Management, explain below: |

The course will be added to the rotation schedule with existing faculty members.

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|  | **Yes**. Specify below: |

1. **Existing program(s) in which course will be offered (i.e., any current or pending majors, minors, certificates, etc.)**:

This is designed to support the addition of Quantum Computing for Cybersecurity Minor.

1. **Proposed instructional method by university *(as defined by*** [*AAC Guideline 2.4.3.A*](https://public.powerdms.com/SDRegents/documents/1677939)***)*:**

*Please provide a brief description of how the course is appropriate for the instructional method, as defined in AAC Guidelines.*

R – Lecture. The learning environment will be highly structured with course content largely rooted in facts, principles, ideas, and theory.

1. **Proposed delivery method by university *(as defined by*** [*AAC Guideline 2.4.3.B*](https://public.powerdms.com/SDRegents/documents/1677940) *and* [*2.4.3.B(A-1*](https://public.powerdms.com/SDRegents/documents/1677941)*)****)*:**

X01 (F2F) and X15 (Online Asynchronous)

1. **Term change will be effective**: Fall 2025
2. **Can students repeat the course for additional credit?**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | Yes, total credit limit: |  |  |  | No |

1. **Will grade for this course be limited to S/U (pass/fail)?**

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| --- | --- | --- | --- |
|  | Yes |  | No |

1. **Will section enrollment be capped?**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | Yes, max per section: | 20 |  |  | No |

1. **Will this course equate (i.e., be considered the same course for degree completion) with any other unique or common courses in the common course system database?**

|  |  |  |  |
| --- | --- | --- | --- |
|  | Yes |  | No |
| *If yes, indicate the course(s) to which the course will equate (add lines as needed):* | | | |
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| **Prefix & No.** | **Course Title** |
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1. **Is this prefix approved for your university?**

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|  | Yes |  | No |
| *If no, provide a brief justification below:* | | | |
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**Section 4. Department and Course Codes (Completed by University Academic Affairs)**

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| 1. **University Department:** | Computer Sciences |

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| 1. **Banner Department Code:** | DCSC |

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| 1. **Proposed** [**CIP Code**](http://nces.ed.gov/ipeds/cipcode/default.aspx?y=55)**:** | 11.0101 | | | | |
|  |  | | | | |
| *Is this a new CIP code for the university?* | |  | Yes |  | No |