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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 | | |  | 10/16/2023 |
| **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.

|  |  |  |
| --- | --- | --- |
| **Prefix & No.** | **Course Title** | **Credits** |
| CSC 726 | Neural Networks | 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 an in-depth look at deep learning architectures, methodologies, and mathematics to help students understand their proper application. Architectures studied include multilayer perceptron, convolutional neural networks, recurrent neural networks, and transformers. Applications for each type of architecture will be discussed, including transfer learning, reinforcement learning, generative and adversarial models, and computer vision. | |

*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?** |
|  |  |  |
|  |  |  |

**Registration Restrictions**

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| --- |
| None |

**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.* |

|  |  |  |
| --- | --- | --- |
| **Prefix & No.** | **Course Title** | **Credits** |
| INFS 778 | Deep Learning: Theory and Algorithms (DSU) | 3 |
| CSC 760 | Deep Learning | 3 |
| *Provide explanation of differences between proposed course and existing system catalog courses below:* | | |
| The newly proposed CSC 726 course is different than the listed comparable courses in that it will focus on a more technical study of the creation, development, and inner workings of neural networks at a deep level of mathematics and with a requirement of computer programming. The programming requirement is a prerequisite for students accepted into the newly proposed MSAI or existing MSCS degrees. The other comparable courses listed study pre-existing deep leaning topologies and shift focus to business applications and other use cases of known problems in Artificial Intelligence. While this proposed course will explore applications of neural networks, there will be a focus on low-level neural network creation and development outside of using existing code libraries that is found in INFS 778 or CSC 760. | | |

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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. |  |

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

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

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

MS in Artificial Intelligence

1. **Proposed instructional method by university *(as defined by*** [*AAC Guideline 5.4*](https://www.sdbor.edu/administrative-offices/academics/academic-affairs-guidelines/Documents/5_Guidelines/5_4_Guideline.pdf)***)*:**

*If requesting an instructional method that is exempt from the* [Section Size Guidelines](https://www.sdbor.edu/administrative-offices/academics/academic-affairs-guidelines/Documents/5_Guidelines/5_7_Guideline.pdf)*, please provide a brief description of how the course is appropriate for the instructional method, as defined in AAC Guidelines.*

Lecture (R)

1. **Proposed delivery method by university *(as defined by*** [*AAC Guideline 5.5*](https://www.sdbor.edu/administrative-offices/academics/academic-affairs-guidelines/Documents/5_Guidelines/5_5_Guideline.pdf)***)*:**

01 Face to face & 015 asynchronous online

1. **Term change will be effective**:

Fall 2024

1. **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)?**

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

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

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | Yes, max per section: | 25 |  |  | 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** |
|  |  |

1. **Is this prefix approved for your university?**

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| --- | --- | --- | --- |
|  | Yes |  | No |
| *If no, provide a brief justification below:* | | | |
|  | | | |

**Section 4. Department and Course Codes (Completed by University Academic Affairs)**

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| 1. **University Department:** | D8N – DCSC Computer Science |

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

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| 1. **Proposed** [**CIP Code**](http://nces.ed.gov/ipeds/cipcode/default.aspx?y=55)**:** | 11.0401 | | | | |
|  |  | | | | |
| *Is this a new CIP code for the university?* | |  | Yes |  | No |