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|  | **SOUTH DAKOTA BOARD OF REGENTS**  ACADEMIC AFFAIRS FORMS |
| Existing Courses: Minor Modifications |
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Use this form to request minor modifications of existing unique and common courses. Consult the system course database for information about existing courses before submitting this form. If the course revision is for an approved General Education course, please see the Revision to General Education Requirements Form.

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| DSU |  | The Beacom College of Computer and Cyber Sciences |  |  |  | Click here to enter a date. |
| **Institution** |  | **Division/Department** |  | **Originator** |  | **Date** |
|  |  |  |  |  |  |  |
|  |  |  |  |  |  | Click here to enter a date. |
| **Department Chair** |  | **School/College Dean** |  | **Institutional Approval Signature** |  | **Date** |

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**Section 1. Existing Course Title and Description**

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| **Prefix & No.** | **Course Title** | **Credits** |
| CSC 478/578 | Generative Deep Learning | 3 |

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| **Effective Date:** | 8/1/2023 |

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| **This course is a (*Place an “X” in the appropriate box*):** | | | | |
|  | **Unique Course (see section 2)** |  |  | **Common Course (see section 3)** | |

**Section 2. Unique Courses: Requested Minor Modifications**

***Place an “X” in the appropriate boxes*.**

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|  |  | **Current** |  | **New** |
|  | **Prefix change** |  | to |  |

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|  | **Course Number change** |  | to |  |

*NOTE: You may only change a unique course number to a number not currently used in “active” status at another university. Consult the system database.*

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|  | **Credit hours** |  | to |  |

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|  | **Course pre-requisites** | CSC 386 | to | CSC 247 |

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|  | **Course co-requisites** |  | to |  |

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|  | **Registration restriction** |  | to |  |

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|  | **Enrollment limitation** |  | to |  |

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|  | **Repeatable for additional credit** | No | to | Yes |

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|  | **Grading option** |  | to |  |

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|  | **Course title change** | Artificial Intelligence Tools & Frameworks |

*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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|  | **Cross-listing and equating with** |  |

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|  | **Dual-listing at 400/500 level** |

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|  | **Course description (that does not change course content). Complete table below:** |

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| *Existing description:* |
| This course aims to discover how to re-create some of the most impressive examples of generative deep learning models, such as variational auto-encoders, generative adversarial networks (GANs), encoder-decoder models, and world models. It also aims to explore GANs to study important real-world applications, including image/video manipulation and generation, offense attacks and countermeasures, risk and recovery in healthcare and pharmacology, and so on. |

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| *New description:* |
| This course is intended for students who already have a foundational understanding of Artificial Intelligence (AI) and are interested in deepening their knowledge and skills in this rapidly evolving field. Specific course topics will vary each semester, but may include deep learning, natural language processing, computer vision, AI and cybersecurity.    To enhance student learning, this course will incorporate hands-on projects and assignments that will require students to implement and experiment with the techniques covered in class. These projects will help students develop practical skills in AI, as well as gain experience working with popular AI frameworks. |
| 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. |

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|  | **Add course in x9x series** | |
| *CIP Code:* |  |

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| *New CIP Code for this university?* |  |  | Yes |  | No |

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| *Will this university’s sections of the course be limited to S/U (pass/fail)?* |

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|  |  | Yes |  | No |

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|  | **Delete Course (effective date):** | Click here to enter a date. |

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| **Justification for changes indicated in Section 2:** |
| The field of artificial intelligence / machine learning is evolving & changing rapidly. It is not sensible to lock a course to a specific technique or subfield. This change will allow the BS program to move forward without annual curriculum changes. It also frees up faculty to develop new course topics and directions in order to stay in touch with state-of-the-art content. To illustrate consider themes such as:  - Reinforcement Learning  - Natural Language Processing and Large Language Models  - A.I. and Cyber Security  - Generative Deep Learning  - Creative A.I.  - Federated Learning  - Diffusion Models  - Ethical A.I.  - Human-Computer Interaction  - …  The course can be repeated for credit because of rotating topics. Schedule management and advising will ensure appropriate re-enrollment.  The prerequisite will allow students to take the course in the junior and/or senior year. |

**Section 3. Common Courses: Requested Minor Modifications**

***Place an “X” in the appropriate boxes*.**

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|  |  | **Current** |  | **New** |
|  | **Credit hours (within variable limits)** |  | to |  |

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|  | **University specific co-requisites** |  | to |  |

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|  | **Cross-listing and equating with** |  |

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|  | **Dual-listing at 400/500 level** |

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|  | **Add course in x9x series** | |
| *CIP Code:* |  |

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| *New CIP Code for this university?* |  | Yes |  | No |

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| *Will this university’s sections of the course be limited to S/U (pass/fail)?* |

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|  |  | Yes |  | No |

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|  | **x9x grading method** |  | to |  |

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| **Justification for changes indicated in Section 3:** |
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**Section 4. Department and Course Codes (Completed by University Academic Affairs)**

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| 1. **University department code:** |  |

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| 1. **Banner department code:** |  |

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| 1. **Change university department code to:** |  |