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| S:\Communications\Logos and photos\SDBORLogos\final_sdbor_webreadyBW_trans.gif | **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 database through Colleague or the [Course Inventory Report](http://apps.sdbor.edu/ris-reporting/CourseInventoryOptions.cfm) for information about existing courses before submitting this form.

|  |  |  |
| --- | --- | --- |
| DSU |  | **The Beacom College of Computer and Cyber Sciences** |
| **Institution** |  | **Division/Department** |
|  |  | 4/1/2020 |
| **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 database in Colleague and the [Course Inventory Report](http://apps.sdbor.edu/ris-reporting/CourseInventoryOptions.cfm) including pre-requisites, co-requisites, and registration restrictions.

|  |  |  |
| --- | --- | --- |
| **Prefix & No.** | **Course Title** | **Credits** |
| CSC 457/557 | Generative Deep Learning | 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 Colleague.*

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| **Course Description** |  |
| Desc: 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. |

*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 383 | Machine Learning Fundamentals | Prereq |
|  |  |  |

**Registration Restrictions**

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| None |

**Section 2. Review of Course**

1. **Was the course first offered as an experimental course (*place an “X” in the appropriate box*)?**

|  |  |
| --- | --- |
|[ ]  Yes *(if yes, provide the course information below)* |[x]  No |

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

*If the request is for a unique course, verify that you have reviewed the common course catalog via Colleague and the system* [*Course Inventory Report*](http://apps.sdbor.edu/ris-reporting/CourseInventoryOptions.cfm) *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.*

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| --- |
|[x]  **Unique Course** |

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| --- | --- | --- |
| **Prefix & No.** | **Course Title** | **Credits** |
| CSC 449/549 | Advanced Topics in Artificial Intelligence (SDSMT) | 3 |
| CSC 448/548 | Machine Learning (SDSMT) | 3 |
| *Provide explanation of differences between proposed course and existing system catalog courses below:* |
| The proposed CSC 457 course builds on the broad foundation of CSC 447, which is a common course. The CSC 449 class is a broad course with various possible topics that will differ each offering. The proposed course is designed with a specific purpose, which is to introduce the generative learning, a novel and emerging topic in deep learning. While SDSMT’s CSC 449 offer multiple topics (below) in AI. DSU’s CSC 457 mainly introduces 1) variational autoencoders can change facial expressions in photos, 2) practical GAN examples for image and video creation and manipulation, 3) recurrent generative models for text generation. In sum, CSC 457 presents the most recent achievements in AI, and it plays a necessary role in a collection of courses.The CSC 448 class more closely relates to the DSU course CSC 483 and addresses a different facet of the field. CSC 449: This course will cover advanced topics in artificial intelligence, such as: pattern recognition, neural networks, computational neuroscience, evolutionary computing, immunocomputing, swarm intelligence, machine learning, Markov decision processes, reinforcement learning, probabilistic reasoning, fuzzy logic, expert systems, and intelligent agents. Prereq: MATH 225(CalcIII) and CSC 315(Data Structures)CSC 448: A systematic study of the theory and algorithms that constitute machine learning. It covers learning based on examples including genetic algorithms, case-based reasoning, decision trees, and Bayesian methods. Prereq: CSC 315 (Data Structures) |

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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?**

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| --- | --- |
|[ ]  **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. |  |
|[x]  **No**. Schedule Management, explain below: Faculty on staff (O’Brien, Xu, Abassi) will cover the courses on a rotation with other courses. |
|[ ]  **Yes**. Specify below:  |

1. **Existing program(s) in which course will be offered**: BS in Computer Science; MS in Computer Science.
2. **Proposed instructional method by university**: Lecture
3. **Proposed delivery method by university**: 001, 015, 018
4. **Term change will be effective**: Fall 2020
5. **Can students repeat the course for additional credit?**

|  |  |  |  |
| --- | --- | --- | --- |
|[ ]  Yes, total credit limit: |  |  |[x]  No |

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

|  |  |
| --- | --- |
|[ ]  Yes |[x]  No |

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

|  |  |  |  |
| --- | --- | --- | --- |
|[x]  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 in Colleague and the** [**Course Inventory Report**](http://apps.sdbor.edu/ris-reporting/CourseInventoryOptions.cfm)**?**

|  |  |
| --- | --- |
|[ ]  Yes |[x]  No |
| *If yes, indicate the course(s) to which the course will equate (add lines as needed):* |
|  |

|  |  |
| --- | --- |
| **Prefix & No.** | **Course Title** |
|  |  |

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

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| --- | --- |
|[x]  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 Code:**
 | DCSC |

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| 1. **Proposed** [**CIP Code**](http://nces.ed.gov/ipeds/cipcode/default.aspx?y=55)**:**
 | 11.0201 |
|  |  |
| *Is this a new CIP code for the university?* |[ ]  Yes |[x]  No |