SOUTH DAKOTA BOARD OF REGENTS
ACADEMIC AFFAIRS FORMS
New Course Request

USD	**Arts & Sciences/Computer Science**
Institution	**Division/Department**
Elizabeth M. Freeburg	11/19/2020
Institutional Approval Signature	**Date**

Section 1. Course Title and Description

Prefix & No.	Course Title	Credits
CSC 442/542	Applied Math for Data Science and Machine Learning **[Short title: App Math for Data Sci & ML]**	3

Course Description

The course covers the physical significance of mathematical topics (e.g., linear algebra, analytical geometry, matrix operations, statistics, and probability) and the central theme of the data science and machine learning problems (e.g., regression, classifications, and decision making). It includes implementation by taking multiple applications into account.

Pre-requisites or Co-requisites

Prefix & No.	Course Title	Pre-Req/Co-Req?
CSC 155/L	Introduction to Computer Science & Programming **OR**	Pre-Req.
CSC 170/L	Programming for Engineering & Science	Pre-Req

Registration Restrictions N/A

Section 2. Review of Course

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

☒ **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
CSC 402/502	Mathematical Foundations of AI	3
STAT 654	Machine Learn/AI Pattern/Clust	3

Provide explanation of differences between proposed course and existing system catalog courses below:

Unlike the above listed courses, the proposed course covers physical significance of mathematical topics and their respective implementations (in Python/R) to better prepare our students for AI-related prediction and decision-making jobs.

Section 3. Other Course Information

3.1. Are there instructional staffing impacts?

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

This course will be taught with current faculty. CSC-452/542 will be part of the regular faculty teaching load on the course rotation. No new hiring will be necessary.

3.2. Existing program(s) in which course will be offered (i.e., any current or pending majors, minors, certificates, etc.): B.A./B.S./M.S. specializations and certificates in Artificial Intelligence

3.3. Proposed instructional method by university *(as defined by AAC Guideline 5.4)*:
If requesting an instructional method that is exempt from the Section Size Guidelines*, please provide a brief description of how the course is appropriate for the instructional method, as defined in AAC Guidelines.*: D Discussion/Recitation

3.4. Proposed delivery method by university *(as defined by AAC Guideline 5.5*: U01: Face-to-face Term Based Instruction, U15 Internet Asynchronous, and U18 Online Synchronous

3.5. Term change will be effective (enter catalog year): 2021-22

3.6. Can students repeat the course for additional credit?

☐ Yes, total credit limit: _____ ☒ No

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

☐ Yes ☒ No

3.8. Will section enrollment be capped?

☒ Yes, max per section: 30 ☐ No

3.9. 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?

☐ Yes ☒ No

3.10. Is this prefix approved for your university?

☒ Yes ☐ No

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

4.1. University Department Code: UCSC

4.2. Proposed CIP Code: 11.0102

Is this a new CIP code for the university? ☐ Yes ☒ No