



**SOUTH DAKOTA BOARD OF REGENTS
ACADEMIC AFFAIRS FORMS**

New Course Request

SDSU	Jerome J. Lohr College of Engineering/ Department of Mathematics and Statistics
Institution	Division/Department
Dennis D. Hedge	4/16/2025
Institutional Approval Signature	Date

Section 1. Course Title and Description

Prefix & No.	Course Title	Credits
MATH 270	Computational Linear Algebra	3

Course Description

Topics include vectors, matrices, solving systems of linear equations, vector spaces and subspaces, orthogonality, linear transformations, eigenvalues and eigenvectors, and singular value decomposition. Emphasis on computational techniques and applications in data science.

Pre-requisites or Co-requisites

Prefix & No.	Course Title	Pre-Req/Co-Req?
MATH 121 OR MATH 123	Survey of Calculus Calculus I	Pre-Req

Registration Restrictions

None

Section 2. Review of Course

2.1. Will this be a unique or common course?

Unique Course

Prefix & No.	Course Title	Credits
MATH 250	Introduction to Linear Algebra and Proof	3
MATH 412	Linear Algebra	3

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

The proposed new course, MATH 270, covers essential topics in linear algebra with a strong emphasis on computational techniques and algebraic manipulation, focusing on applications in data science. In contrast, the existing MATH 250 emphasizes proof techniques and mathematical abstraction. MATH 412 Linear Algebra is a senior-level course that focuses on advanced proof techniques built from MATH 250 and other math courses with abstractions.

Section 3. Other Course Information

3.1. Are there instructional staffing impacts?

No. Schedule Management, explain below: Workload is available. Sections of MATH 250 will be adjusted to offer MATH 270.

3.2. Existing program(s) in which course will be offered: Computer Science (B.S.), Data Science (A.S. and B.S.)

3.3. Proposed instructional method by university (as defined by AAC Guideline 2.4.3.A): R - Lecture

3.4. Proposed delivery method by university (as defined by AAC Guideline 2.4.3.B and 2.4.3.B(A-1)): X01-Face-to-Face, X15 – Online Asynchronous, X18 – Online Synchronous, X29 – Hybrid Online, X30 –

Hybrid F2F

3.5. Term change will be effective: Fall 2025

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: 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: Department of Mathematics and Statistics

4.2. Banner Department Code: SMAS

4.3. Proposed CIP Code: 27.0101

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

NEW COURSE REQUEST
Supporting Justification for On-Campus Review

<u>Eun Heui Kim</u>	<u>Eun Heui Kim</u>	<u>1/27/2025</u>
Request Originator	Signature	Date
<u>Eun Heui Kim</u>	<u>Eun Heui Kim</u>	<u>1/27/2025</u>
Department Chair	Signature	Date
<u>Suzette Burckhard</u>	<u>Suzette Burckhard</u>	<u>3/11/2025</u>
School/College Dean	Signature	Date

1. Provide specific reasons for the proposal of this course and explain how the changes enhance the curriculum.
MATH 270 will provide the mathematical foundation essential for data scientists and data analytics. This course will offer comprehensive computing and hands-on examples that are essential for a data science degree program, which is currently lacking in our curriculum. Students will gain familiarity with important linear algebra techniques through practical examples and computational exercises in linear algebra, ensuring they are well-prepared for their studies in data science.
2. Note whether this course is: Required Elective
3. In addition to the major/program in which this course is offered, what other majors/programs will be affected by this course?
None
4. If this will be a dual listed course, indicate how the distinction between the two levels will be made. N/A
5. Desired section size 45
6. Provide qualifications of faculty who will teach this course. List name(s), rank(s), and degree(s).
Matthew Biesecker, Associate Professor, Ph.D.
Jung-Han Kim, Associate Professor, Ph.D.
Nathan McClanahan, Lecturer, Ph.D.
Duff Baker-Jarvis, Lecturer, Ph.D.
7. Note whether adequate facilities are available and list any special equipment needed for the course.
No special resources or facilities are required to teach this course.
8. Note whether adequate library and media support are available for the course.
Available support is adequate.
9. Will the new course duplicate courses currently being offered on this campus? Yes No
10. If this course may be offered for variable credit, explain how the amount of credit at each offering is to be determined. N/A