SOUTH DAKOTA BOARD OF REGENTS
ACADEMIC AFFAIRS FORMS

New Course Request

SDSU	**Jerome J. Lohr College of Engineering / Department of Mathematics & Statistics**
Institution	**Division/Department**
Dennis D. Hedge	12/6/2022
Institutional Approval Signature	**Date**

Section 1. Course Title and Description

Prefix & No.	Course Title	Credits
STAT 731	Statistical Genomics	3

Course Description

Topics will include genomic data, data visualization, regression modeling and applications in genomics, dimension reduction, variable selection, genome-wide association mapping, experimental design, dose-response modeling, and simultaneous inferences in genomic data analyses.

Pre-requisites or Co-requisites

Prefix & No.	Course Title	Pre-Req/Co-Req?
STAT 541	Statistical Methods II	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
BIOL 574	Introductory Genomics	3
BIOL 724L	Genomics Techniques	2

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

BIOL 574 Introductory Genomics teaches genomics from a biological perspective and has no statistical prerequisites. The proposed new course teaches statistical genomics and has a graduate level statistics perquisite.

BIOL 724L Genomics Techniques approaches genomics from a laboratory, rather than statistical, perspective.

Section 3. Other Course Information

3.1. Are there instructional staffing impacts?

☒ No. Schedule Management, explain below: Faculty from the Departments of Mathematics & Statistics and Agronomy, Horticulture & Plant Science will co-teach this course in alternate fall semesters. Their existing workloads allow for this addition of one workload unit of teaching every other fall semester.

3.2. Existing program(s) in which course will be offered: Statistics (M.S.), Data Science (M.S.)

3.3. Proposed instructional method by university *(as defined by AAC Guideline 5.4)*: R - Lecture

3.4. Proposed delivery method by university *(as defined by AAC Guideline 5.5)*: 001- Face to Face Term Based Instruction

3.5. Term change will be effective: fall 2023

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: Mathematics & Statistics

4.2. Banner Department Code: SMAS

4.3. Proposed CIP Code: 27.0501

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

NEW COURSE REQUEST
Supporting Justification for On-Campus Review

Kurt Cogswell	Kurt Cogswell	4/25/2022
Request Originator	**Signature**	**Date**
Kurt Cogswell	Kurt Cogswell	4/25/2022
Department Chair	**Signature**	**Date**
Suzette Burckhard	Suzette Burckhard	10/21/2022
School/College Dean	**Signature**	**Date**

1. Provide specific reasons for the proposal of this course and explain how the changes enhance the curriculum.
   Topics in STAT 731 Statistical Genomics will include genomic data, data visualization, regression modeling and applications in genomics, dimension reduction, variable selection, genome-wide association mapping, experimental design, dose-response modeling, and simultaneous inferences in genomic data analyses. Students in many disciplines would benefit from this course. It would be particularly beneficial for students of statistics, data science, and the applied biological sciences by providing them with sound statistical understanding of genomics, a discipline of central importance in the modern biological sciences. Faculty from Mathematics & Statistics and Agronomy, Horticulture & Plant Science will co-teach this course.

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?
   Students in many disciplines would benefit from this course. It would be particularly beneficial for students of statistics, data science, and the applied biological sciences.

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 30

6. Provide qualifications of faculty who will teach this course. List name(s), rank(s), and degree(s).
   Gemechis Djira, Associate Professor, Ph.D.
   Xijin Ge, Professor, Ph.D.
   Jixiang Wu, Professor, Ph.D.

7. Note whether adequate facilities are available and list any special equipment needed for the course.
   Adequate facilities are available. No special equipment is needed.

8. Note whether adequate library and media support are available for the course.
   Adequate library and media support are available.

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