



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

New Course Request

SDSU	Agriculture & Biological Sciences / Agronomy, Horticulture & Plant Science
Institution	Division/Department
Dennis D. Hedge	5/8/2018
Institutional Approval Signature	Date

Section 1. Course Title and Description

Prefix & No.	Course Title	Credits
PS 735	Next Generation Sequencing Data Analysis	2

Course Description	<p>This course covers bioinformatics applications in next-generation sequencing (NGS) data analysis for students in plant science, biology and microbiology, computer science, and mathematics and statistics. The students will be exposed to general/advanced computational techniques for NGS data analysis, public databases/web servers, and major bioinformatic algorithms and programs. A project-based strategy will be adopted throughout the class so that students can understand algorithms in the context of solving the biological problems.</p>
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Pre-requisites or Co-requisites

Prefix & No.	Course Title	Pre-Req/Co-Req?
STAT 535	Applied Bioinformatics or STAT 541 Predictive Analytics I	Pre-req

Registration Restrictions

None

Section 2. Review of Course

2.1. Was the course first offered as an experimental course?

Yes (if yes, provide the course information below) No.

2.2. Will this be a unique or common course?

Unique Course

Prefix & No.	Course Title	Credits
STAT 535	Applied Bioinformatics	3
STAT 736	Bioinformatics	3

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

<p>STAT 535 is designed for students with biological background to learn how to analyze and interpret traditional genomics data. PS 735 will focus on the next-generation sequencing data analysis and modeling, including the data of breeding, cultivation and production of agricultural plants, which required advanced computational technologies. Hence, STAT 535 is set as the pre-requisites for this proposed class. STAT 736 is an introduction to bioinformatics for students in mathematics and physical sciences, while the focus of PS 735 is real data analysis strategies. More data-driven studies and knowledge will be introduced on the proposed class.</p>

Common Course Indicate universities that are proposing this common course:
 BHSU DSU NSU SDSMT SDSU USD

Section 3. Other Course Information

3.1. Are there instructional staffing impacts?

No. Schedule Management, explain below: This has already been taught twice so the scheduling and management has been approved by the Department Head.

3.2. Existing program(s) in which course will be offered: Plant Science (M.S./Ph.D.); Biological Sciences (M.S./Ph.D.)

3.3. Proposed instructional method by university: R - Lecture

3.4. Proposed delivery method by university: 001 - Face to Face Term Based Instruction

3.5. Term change will be effective: Fall 2018

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: 10 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: SAHPS

4.2. Proposed CIP Code: 01.1101

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

**NEW COURSE REQUEST
Supporting Justification for On-Campus Review**

Dr. Qin Ma	<i>Qin Ma</i>	10/25/2017
Request Originator	Signature	Date
David Wright	David Wright	3/22/2018
Department Chair	Signature	Date
Donald Marshall	Donald Marshall	3/22/2018
School/College Dean	Signature	Date

1. Provide specific reasons for the proposal of this course and explain how the changes enhance the curriculum.

The goal of this course is to get graduate students more prepared in their ongoing projects in support of biological information discovery and results interpretation. The students will be trained by this interdisciplinary science including but not limited to: improved computational skills (data analysis, modeling, and visualization), bioinformatics algorithms and resources, and PERL and R programming.

The course description and syllabus have been circulated among SDSU faculties from the Plant Science, Biology & Microbiology, Mathematics & Statistics, Animal Science departments. Some very positive feedbacks and constructive comments have been received. Until now, this

course has been taught twice as a special topic in Fall 2016 and Fall 2017. A total of 43 graduate students have taken this class, coming from seven different departments.

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?
Biology graduate students; Mathematics & Statistics graduate students; Animal science graduate students; NRM graduate students, Computer science graduate students.
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 10
6. Provide qualifications of faculty who will teach this course. List name(s), rank(s), and degree(s).
Qin Ma, Assistant Professor, Ph.D.
7. Note whether adequate facilities are available and list any special equipment needed for the course.
A computer lab will be utilized for this course; however, it is not required.
8. Note whether adequate library and media support are available for the course.
There is adequate library and media support for this course.
9. Will the new course duplicate courses currently being offered on this campus?
 Yes No
If yes, provide justification.
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