



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

**New Course Request**

<b>USD</b>	<b>Arts &amp; Sciences/Biology</b>
<b>Institution</b>	<b>Division/Department</b>
<i>Elizabeth M. Freeburg</i>	<i>3/20/2017</i>
<b>Institutional Approval Signature</b>	<b>Date</b>

**Section 1. Existing Course Title and Description**

Prefix & No.	Course Title	Credits
BIOL 781	Data Mining in Bioinformatics	3

**Course Description**

The main objective of this course is to provide knowledge about data mining with applications in bioinformatics. Data Mining is the nontrivial extraction of implicit, previously unknown, and potentially useful information from pre-existing data. It has matured as a discipline merging ideas from statistics, machine learning, and database etc. The topics covered include the mathematical background for data mining, association mining, classification, clustering, semi-supervised learning, ensemble methods, web mining, and basics of natural language processing.

**Pre-requisites or Co-requisites (add lines as needed)**

Prefix & No.	Course Title	Pre-Req/Co-Req?
BIOL 769	Programming for Biology	Pre-Req or permission of the instructor

**Registration Restrictions N/A**

**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 (place an "X" in the appropriate box)?**

**Unique Course**

Prefix & No.	Course Title	Credits
CSC 586	Data Mining	3
CSC 548	Machine Learning	3

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

The existing courses CSC 586 and CSC 548 introduce general knowledge in data mining and machine learning, and are suitable for students in computer science. The proposed course will cover all techniques and algorithms introduced in CSC 586 and CSC 548, but will be designed for students in the bioinformatics specialization of the Biology PhD program. The main difference is, for each technique or algorithm, its unique applications in bioinformatics will be demonstrated and analyzed, so that students not only know the theory and algorithms, but also know how to link them to real research problems in the bioinformatics domain.

### **Section 3. Other Course Information**

**3.1. Are there instructional staffing impacts?**

- No. Schedule Management, explain below: Will be taught by existing faculty member as part of load.

**3.2. Existing program(s) in which course will be offered:** Graduate Program in Biology

**3.3. Proposed instructional method by university:** R-Lecture

**3.4. Proposed delivery method by university:** 001-Face-to-face

**3.5. Term change will be effective:** Spring 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: 15  No

**3.9. Will this course equate 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:** UBIOL

**4.2. Proposed [CIP Code](#):** 26.1103 Bioinformatics

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