



SOUTH DAKOTA BOARD OF REGENTS
ACADEMIC AFFAIRS FORMS
New Course Request

USD	Arts & Sciences / Computer Science
Institution	Division/Department
<i>Elizabeth M. Freeburg</i>	11/16/2017
Institutional Approval Signature	Date

Section 1. Course Title and Description

Prefix & No.	Course Title	Credits
CSC/DSCI 505	Business Analytics Fundamentals	3

Course Description
An introduction to the basics of data analytics programming, using current analytics programming languages, such as R, Python and SQL, to store, retrieve, and transform data producing problem solutions, insights, and analytics applications.

Pre-requisites or Co-requisites (add lines as needed) N/A

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?

Unique Course

Prefix & No.	Course Title	Credits
CSC 561	Programming Languages	3
CSC 570	Software Engineering	3

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

CSC/DSCI 505 will differ markedly from CSC 561 and CSC 570. CSC/DSCI 505 will cover the languages commonly used in analytics. Initially, CSC/DSCI 505 will use Python, R, and SQL to prepare students to access, cleanse, transform, and derive knowledge from data through writing and executing code in those languages. The purpose of the code will be to express analytics techniques and methods in software. Python and R are the two most frequently used open sources languages used in analytics. The R programming language is used by a large plurality of data mining practitioners, and statisticians, for creating and deploying statistical software. Python is a general-purpose programming language, designed to be easy to learn, write and read. Python is an interpreted language that supports functional programming, imperative, object-oriented, and procedural programming paradigms. But CSC/DSCI 505 will focus on procedural programming, due to the nature of the analytics tasks our students will need to complete. Given that CSC/DSCI 505 is the preparation for subsequent courses using the SAS® programming language, and that SAS programming is procedural, it will be necessary to ensure that students understand how to write procedural code well. SQL is almost the only data sub-language used to interface analytics applications with relational database management systems. SQL is a fourth-generation declarative language, and the declarative aspect will be used in CSC/DSCI 505. SQL has procedural capabilities as well, but SQL’s procedural aspects are rarely

needed to perform the tasks of an analytics professional. SQL procedural techniques are usually created by software engineers. Python, R, and SQL are not covered in either CSC 561 or CSC 570. CSC 561 studies the syntax (or form) and semantics (or meaning) of languages but not R, Python or SQL. CSC 561 has a theory orientation, but CSC/DSCI 505 is an applied course. CSC 570 explores the design, coding, and testing phases of the software life cycle, with a focus on building quality software on time and within budget, but is not an introductory course, and does not use R, Python or SQL, and does not have an analytics focus.

Section 3. Other Course Information

3.1. Are there instructional staffing impacts?

- Yes. Specify below: CSC/DSCI 505 is an additional course which will require staffing during the summer term.

3.2. Existing program(s) in which course will be offered: Master of Science in Business Analytics and Master of Science in Computer Science

3.3. Proposed instructional method by university: D-Discussion/Recitation

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

3.5. Term change will be effective (enter catalog year): Summer 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: 30 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: UCSCI

4.2. Proposed [CIP Code](#): 52.1302 Business Statistics

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