



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

**New Graduate Degree Program**

<b>UNIVERSITY:</b>	<b>USD</b>
<b>PROPOSED GRADUATE PROGRAM:</b>	<b>Master of Science in Business Analytics</b>
<b>EXISTING OR NEW MAJOR(S):</b>	<b>Existing (UBSAN)</b>
<b>DEGREE:</b>	<b>Master of Science</b>
<b>EXISTING OR NEW DEGREE(S):</b>	<b>Existing</b>
<b>INTENDED DATE OF IMPLEMENTATION:</b>	<b>Summer 2018</b>
<b>PROPOSED CIP CODE:</b>	<b>52.1302 Business Statistics</b>
<b>SPECIALIZATIONS:<sup>1</sup></b>	
<b>IS A SPECIALIZATION REQUIRED (Y/N):</b>	<b>No</b>
<b>DATE OF INTENT TO PLAN APPROVAL:</b>	
<b>UNIVERSITY DEPARTMENT:</b>	<b>Economics and Decision Sciences (UECDS)</b>
<b>UNIVERSITY DIVISION:</b>	<b>Beacom School of Business (UBU)</b>

**University Approval**

*To the Board of Regents and the Executive Director: I certify that I have read this proposal, that I believe it to be accurate, and that it has been evaluated and approved as provided by university policy.*

\_\_\_\_\_ Date

President of the University

**1. What is the nature/purpose of the proposed program?**

The nature of the M.S. in Business Analytics will be a program of preparation for graduates to become professional analytics practitioners. USD’s Beacom School of Business houses an undergraduate program in operational analytics and a business analytics specialization within the MBA program. The proposed program is an extension of those offerings.

The M.S. in Business Analytics’ purpose is to equip graduates to implement solutions to business problems by discovering knowledge derived from the application of computer science, mathematics, statistics, and information technology to analytics problems. The M.S. in Business Analytics will be a STEM program comprising coursework in Analytics, Statistics, and Business.

There is a substantial need for data analytics professionals in South Dakota. Analytics skills are in demand, and the supply is insufficient to meet that demand. The M.S. in Business

<sup>1</sup> If the proposed new program includes specific specializations within it, complete and submit a New Specialization Form for each proposed specialization and attach it to this form. Since specializations appear on transcripts, they require Board of Regents approval.

Analytics program will concentrate on business applications where problems are susceptible to solution through data analytics.

The demand for business analytics graduates from USD is shown by the number of firms expressing an interest in graduates as soon as graduates are available. The list of regional firms already expressing interest is given below:

<b>Firm Name</b>	<b>City/State</b>	<b>Firm Name</b>	<b>City/State</b>
3M	Brookings	Raven Industries	Sioux Falls
Daktronics	Brookings	ReliaMax Insurance	Sioux Falls
AaLadin Industries	Elk Point	Sanford	Sioux Falls
Cabela's	Mitchell	Wells Fargo	Sioux Falls
Trail King	Mitchell	Masaba	Vermillion
Black Hills Corporation	Rapid City	Polaris	Vermillion
Avera	Sioux Falls	Vishay	Yankton
Bancorp	Sioux Falls	Wellmark BC/BS	Des Moines, IA
Citibank	Sioux Falls	Wells Enterprises	Lemars, IA
PREMIER	Sioux Falls	Tyson	Sioux City, IA
John Morrell	Sioux Falls	First National Bank	Omaha, NE
Meta	Sioux Falls	BPI	S. Sioux City, NE
Poet	Sioux Falls	Titan Machinery	West Fargo, ND

Business Analytics enables knowledge derivation from data. Some testimonials to the importance of data are:

*"Data is the new science. Big Data holds the answers."* - Pat Gelsinger, the Chief Executive Officer of VMware, Inc. and former Chief Operating Officer of EMC Corporation.

*"Data are becoming the new raw material of business."* - Chris Lynch, former President and chief executive officer of Vertica Systems.

*"Hiding within those mounds of data is knowledge that could change the life of a patient, or change the world."* – Atul Butte, Stanford

*"The goal is to turn data into information, and information into insight."* – Carly Fiorina, former chief executive of Hewlett-Packard

The M.S. in Business Analytics will prepare South Dakota graduates for careers as problem-solving business professionals. Those graduates will enable South Dakota companies to transform data into insight.

**2. How does the proposed program relate to the university's mission and strategic plan, and to the current Board of Regents Strategic Plan 2014-2020?<sup>2</sup>**

The University of South Dakota's mission, as provided in BOR Policy 1:10:1, is:

*The legislature established The University of South Dakota as the liberal arts university*

---

<sup>2</sup> South Dakota statutes regarding university mission are located in SDCL 13-57 through 13-60; Board of Regents policies regarding university mission are located in Board Policies 1:10:1 through 1:10:6. The Strategic Plan 2014-2020 is available from [https://www.sdbor.edu/the-board/agendaitems/Documents/2014/October/16\\_BOR1014.pdf](https://www.sdbor.edu/the-board/agendaitems/Documents/2014/October/16_BOR1014.pdf).

*to meet the needs of the State and region by providing undergraduate and graduate programs in the liberal arts and sciences, and professional education in business, education, fine arts, law, and medicine, and other courses or programs as the Board of Regents may determine. (SDCL 13-57-1)*

*The Board implemented SDCL 13-57-1 by authorizing undergraduate and graduate programs in the liberal arts and sciences and in professional education and by requiring the University to promote excellence in teaching and learning, to support research, scholarly and creative activities, and to provide service to the State of South Dakota, the region, and beyond. The University of South Dakota is the comprehensive university with the South Dakota System of Higher Education.*

USD is explicitly charged with providing “professional education in business” as part of its statutory mission. The M.S. in Business Analytics contributes to the fulfillment of USD’s statutory mission, conforms to the SD Board of Regents requirements for USD graduate programs, and furthers the following Board System Strategic Goals:

- ✓ South Dakota’s population will be more highly-educated;
- ✓ South Dakota will have a working-age population with advanced levels of education needed to support our democracy and the modern, knowledge-based economy;
- ✓ South Dakota will be a recognized national leader in the use of information technology to enhance its educational, economic, social, scientific, and political development.

### **Goal 1: Student Success**

#### **Intended Outcomes:**

- Grow the number of undergraduate and graduate degrees awarded.

#### **Expand educational access**

- Encourage campuses to create innovative programs to attract and retain in SD, more non-resident students.

### **Goal 2 - Academic Quality and Performance**

#### **Intended Outcomes:**

- Continue to approve new graduate programs.

### **Goal 3 - Research and Economic Development**

#### **Intended Outcomes:**

- Increase the number of graduates from STEM programs

#### **Action steps**

2. **STEM Education** – Expand educational opportunities in the areas of science, technology, engineering, and mathematics.
  - Increase the number of master’s and doctoral level STEM programs.

The M.S. in Business Analytics will be a STEM designated program. The CIP Code for the M.S. in Business Analytics will be 52.1302<sup>3</sup>, the CIP Code Title will be Business Statistics; its IPEDS description is:

---

<sup>3</sup> <https://www.ice.gov/sites/default/files/documents/Document/2016/stem-list.pdf>

**Definition:** A program that focuses on the application of mathematical statistics to the description, analysis, and forecasting of business data. Includes instruction in statistical theory and methods, computer applications, data analysis and display, long- and short-term forecasting methods, and market performance analysis.<sup>4</sup>

The M.S. in Business Analytics will leverage the combined power of mathematical statistics, computing technology, data analysis and visualization to construct business-data-based predictions. Business forecasting and market analysis predictions will be taught and learned through both presentation of statistical-theory-and-methods, and implementation of the theory and methods, in a business setting. In addition, predictions will be coupled with mathematically generated optimal prescriptions to operationalize the analytics, transforming business problems into business solutions.

**3. Describe the workforce demand for graduates of the program, including national demand and demand within South Dakota. Provide data and examples; data sources may include but are not limited to the South Dakota Department of Labor, the US Bureau of Labor Statistics, Regental system dashboards, etc.**

The demand for quantitatively skilled analytics graduates is demonstrated by the South Dakota Department of Labor and Regulation’s Hot Careers (high-demand)<sup>5</sup> projections shown below for the types of jobs our graduates would typically seek:

SOC Code	Occupational Title	Average Annual Demand for Workers	2014 Workers	2024 Workers	% Change 2014-2024	Average Annual Wage
13-1111	Management Analysts	60	2,662	2,893	8.7%	\$76,190
13-1161	Market Research Analysts and Marketing Specialists	19	576	692	20.1%	\$57,179

Note that it is likely that the actual demand will exceed the projections. Here are the 2010 projections:<sup>6</sup>

SOC Code	Occupational Title	2010 Workers	2020 Workers	Numeric Change	% Change	Ave. Annual Demand
13-1111	Management Analysts	2,010	2,275	265	13.2%	59
13-1161	Market Research Analysts and Marketing Specialists	300	405	105	35.0%	18

<sup>4</sup> <https://nces.ed.gov/ipeds/cipcode/cipdetail.aspx?y=55&cipid=88927>

<sup>5</sup> SD Department of Labor and Regulation, Labor Market Information Center, “Hot Careers,” available from [http://dlr.sd.gov/lmic/hot\\_careers.aspx](http://dlr.sd.gov/lmic/hot_careers.aspx).

<sup>6</sup> Ibid.

The 2010 Management Analyst estimate for 2020 was surpassed six years early in 2014, and then by 17%. For the Market Research Analysts and Marketing Specialists 2010 estimate for 2020, had been outstripped by 42% in 2014.

Another excellent indicator is jobs advertised on the Internet September 29, 2017 for Sioux Falls:

Employer	Position
<b>Adams, Inc</b>	Credit Analyst
<b>Amesbury Truth</b>	Transition Analyst
<b>Avera Health</b>	Principal Clinical Intelligence Analyst
<b>Avera Health</b>	Reimbursement Analyst
<b>Avera Health</b>	Senior Decision Support Analyst-Finance
<b>Avera McKennan Hospital</b>	Quality and Infection Prevention Data Analyst
<b>Cameo Consulting Group, LLC</b>	Acquisition Analyst
<b>Citi</b>	Financial Accounting Analyst 2 (App Developer)
<b>Citi</b>	Financial Accounting Analyst 2 (App Developer)
<b>Citi</b>	Financial Accounting Analyst 3
<b>Diamond Mowers</b>	Sales Analyst
<b>DocuTAP</b>	QA Analyst - Manual Tester
<b>Farmer's Business Network, Inc</b>	Sales Operations Analyst
<b>First PREMIER Bank</b>	Ag Banking Credit Analyst
<b>Good Samaritan Society</b>	Affordable Housing Asset Management Analyst
<b>Good Samaritan Society</b>	Financial Planning and Analysis Consultant
<b>GPAC</b>	Agricultural Credit Analyst
<b>GPAC</b>	Credit Analyst
<b>Great Western Bank</b>	Commercial Loan Analyst
<b>Great Western Bank</b>	Credit Analyst
<b>Hitachi Solutions</b>	Azure Analytics Consultant
<b>MetaBank</b>	Business Analyst
<b>MetaBank</b>	Financial Intelligence Unit Analyst I (9)
<b>MetaBank</b>	Senior Operations Analyst
<b>MetaBank</b>	Test Analyst
<b>MetaBank</b>	Support Analyst I - Marketing Reviewer
<b>Midco</b>	Application Analyst II
<b>PREMIER Bankcard</b>	Analytic Consultant III
<b>PREMIER Bankcard</b>	Analytic Consultant IV
<b>PREMIER Bankcard</b>	Business Analyst II
<b>Raven</b>	Financial Reporting Analyst II
<b>ReliaMax</b>	Senior Financial Analyst
<b>Sammons Financial Group</b>	IT QA Analyst 3
<b>Sanford Health</b>	Business Analyst - IT Imagenetics

<b>Sanford Health</b>	Business Intelligence Analyst - EDA
<b>Sanford Health</b>	Financial Analyst - Finance
<b>Sanford Health</b>	Financial Analyst - Profile
<b>Sanford Health</b>	Lead Chargemaster Analyst - Reimbursement
<b>Sanford Health</b>	Business Analyst - IT Human Resources Applications
<b>SONIFI Solutions</b>	Healthcare Data Analyst
<b>The Bancorp, Inc</b>	Sr. Relationship Analyst - Third Party Risk
<b>The Bancorp, Inc.</b>	Business Intelligence Analyst
<b>The First National Bank in Sioux Falls</b>	Business Intelligence Analyst
<b>Transperfect</b>	Digital Marketing Analyst
<b>TriTech &amp; Zuercher Technologies</b>	Product Analyst
<b>U.S. Bank</b>	Risk Assessment Analyst
<b>Veterans Benefits Administration</b>	Management Analyst
<b>Vizient, Inc.</b>	Senior Analyst - TCPI
<b>Wells Fargo</b>	Credit Analyst 3
<b>Wells Fargo</b>	Foundational Data Analyst / Business Systems Consultant 5

The job market is quite strong for analytics positions.

#### 4. How will the proposed program benefit students?

The Master of Science in Business Analytics will benefit graduates by equipping them to provide analytical expertise in service of the needs of others. As a consequence, graduates will earn excellent salaries in return for their business analytic capabilities. Salary data from the South Dakota Department of Labor and Regulation’s Hot Careers, as indicated under Section 3 above, shows analytics positions pay \$57,000 to \$76,000; meanwhile, South Dakota’s median annual wage in 2016 was \$40,070.<sup>7</sup>

#### 5. Program Proposal Rationale:

##### A. If a new degree is proposed, what is the rationale<sup>8</sup>

The degree is not new to the university. However, the rationale for the new program is to respond to requests by employers for more graduates with skills in analytics. Graduates will enable organizations to leverage their data to provide insights into increased efficiency and effectiveness, reducing costs and improving outcomes.

##### B. What is the rationale for the curriculum?

The Master of Science in Business Analytics curriculum will develop the knowledge and confidence of students to critically analyze problems, then synthesize solutions through the creative application of analytics methods and tools. Knowledge, understanding and skills

<sup>7</sup> US Department of Labor, Bureau of Labor Statistics, May 2016 State Occupational Employment and Wage Estimates South Dakota, All Occupations, available from [https://www.bls.gov/oes/current/oes\\_sd.htm](https://www.bls.gov/oes/current/oes_sd.htm).

<sup>8</sup> “New Degree” means new to the university. Thus if a campus has degree granting authority for a Ph.D. program and the request is for a new Ph.D. program, a new degree is not proposed.

learned through the curriculum will enable graduates to enrich and transform the products and services delivered by employers.

**C. Demonstrate/provide evidence that the curriculum is consistent with current national standards.**

While most of the tools and techniques taught in analytics curricula are common to all programs, there are differences in emphasis. Programs with a Computer Science orientation concentrate on algorithms and tool development. Mathematics and Statistics oriented programs focus on proofs and models. Programs in Business emphasize applications.

We collected data from one hundred twenty analytics curricula for programs established in the United States. We used latent Dirichlet allocation to detect curricula topics to narrow our research to the following thirty-six programs with an applied orientation.

Arizona State University	New York University	University of Iowa
Benedictine University	Oklahoma State University	University of Miami
Bentley University	Pace University	University of Michigan at Dearborn
Creighton University	Pennsylvania State University	University of Minnesota
Drexel University	Quinnipiac University	University of Rochester
Fairfield University	Rensselaer Polytechnic Institute	University of Southern California
Fordham University	Saint Joseph's University	University of Tennessee at Knoxville
George Washington University	Southern Methodist University	University of Texas at Arlington
Indiana University	Stevens Institute of Technology	University of Texas at Austin
Iowa State University	University of Cincinnati	University of Texas at Dallas
Mercer University	University of Colorado Denver	Washington University in St. Louis
Michigan State University	University of Denver	Xavier University

Our review led us to further narrow the field to:

- University of Texas at Austin’s McCombs School of Business Master of Science in Business Analytics <https://www.mcombs.utexas.edu/Master-of-Science-in-Business-Analytics>.
- University of Minnesota’s Carlson School of Management’s Master of Science in Business Analytics <https://carlsonschool.umn.edu/degrees/master-science-in-business-analytics>
- Oklahoma State University’s Spears School of Business Master of Science in Business Analytics <https://business.okstate.edu/analytics/msban/index.html>



- University of Iowa's Tippie College of Business Master of Science in Business Analytics <http://catalog.registrar.uiowa.edu/tippie-business/management-sciences/business-analytics-ms/#requirementstext>

Our curriculum draws on those four curricula, all of which are highly regarded and accredited by the Association to Advance Collegiate Schools of Business (AACSB International).

**D. Summary of the degree program (complete the following tables):**

Master of Science in Business Analytics	Credit Hours	Percent
Required courses, all students	27	90%
Required option or specialization, if any	0	0%
Electives	3	10%
<b>Total Required for the Degree Total</b>	<b>30</b>	<b>100%</b>

**Required Courses**

Prefix	Number	Course Title	Credit Hours	New (yes, no)
ACCT	511	Accounting and Finance Fundamentals <sup>9</sup>	3	yes
DSCI	501	Marketing and Operations Fundamentals <sup>10</sup>	3	yes
DSCI	505	Business Analytics Fundamentals <sup>11</sup>	3	yes
DSCI	507	Business Analytics Modeling <sup>12</sup>	3	yes
DSCI	519	Advanced Business Analytics Modeling	3	yes
BADM	720	Quantitative Analysis	3	no
DSCI	723	Data Management and Warehousing	3	no
DSCI	724	Data Mining for Managers	3	no
DSCI	725	Data Mining for Competitive Advantage	3	no
DSCI	726	Operational Analytics	3	no
DSCI	784	Project Capstone	3	yes
Subtotal			33 (27) <sup>13</sup>	

**Elective Courses: List courses available as electives in the program. Indicate any proposed new courses added specifically for the program.**

Prefix	Number	Course Title	Credit Hours	New (yes, no)
ACCT	781	Managerial Accounting	3	no
BADM	710	Managerial Finance	3	no
BADM	760	Operations Management	3	no
BADM	770	Managerial Marketing	3	no
DSCI	526	Lean Management	3	no
DSCI	527	Supply Chain Management	3	no
DSCI	541	Project Management	3	no

<sup>9</sup> Required for students with non-business baccalaureates

<sup>10</sup> Required for students with non-business baccalaureates

<sup>11</sup> Required for students with non-STEM baccalaureates

<sup>12</sup> Required for students with non-STEM baccalaureates

<sup>13</sup> The degree will have twenty-seven required hours for business baccalaureates, twenty-seven required hours for STEM baccalaureates, and thirty-three hours for those students with baccalaureates in neither STEM disciplines nor business disciplines only.



DSCI	727	Quality and Six Sigma Management	3	no
ECON	521	Econometrics	3	no
ECON	782	Managerial Economics II	3	no
<b>Subtotal</b>			<b>0-3</b>	

## 6. Student Outcomes and Demonstration of Individual Achievement

### A. What specific knowledge and competencies, including technology competencies, will all students demonstrate before graduation? Complete Appendix A – Outcomes using the system form.

See Appendix A, which contains the student outcomes developed to ensure that graduates are prepared to perform business analytics professionally. Five categories comprise the focus of the program.

- (1) Understand and use the vocabulary of business.
- (2) Comprehend essential business analytics concepts.
- (3) Write analytics programs using common analytics programming languages.
- (4) Apply statistical methods expressed in software to convert data into knowledge.
- (5) Exhibit a commitment to ethical professional practice.

### B. Are national instruments (i.e., examinations) available to measure individual student achievement in this field? If so, list them.

None.

### C. How will individual students demonstrate mastery? Describe the specific examinations and/or processes used, including any external measures.<sup>14</sup> What are the consequences for students who do not demonstrate mastery?

Each student will demonstrate mastery through successful fulfillment of the requirements associated with each outcome specified in Appendix A. Students must earn a 3.0 grade-point average or better in their coursework and complete and a professional master's capstone project.

## 7. What instructional approaches and technologies will instructors use to teach courses in the program? Standard outcome-oriented techniques will be used for instruction. Laboratory work will include exercises and projects where the analytics concepts described are realized in software. The SDBOR learning management system, Desire2Learn, will be used for all courses. In flipped courses, instruction includes content delivered through video, and weekly use of the discussion board in D2L.

## 8. Did the University engage any developmental consultants to assist with the development of the curriculum?<sup>15</sup> Did the University consult any professional or accrediting associations during the development of the curriculum? What were the contributions of the consultants and associations to the development of curriculum?

<sup>14</sup> What national examination, externally evaluated portfolio or student activity, etc., will verify that individuals have attained a high level of competence and identify those who need additional work?

<sup>15</sup> Developmental consultants are experts in the discipline hired by the university to assist with the development of a new program (content, courses, experiences, etc.). Universities are encouraged to discuss the selection of developmental consultants with Board staff.

We developed the curriculum without developmental consultants or professional or accrediting associations. However, the curriculum was developed with reference to the programs listed in subsection 5C above.

- 9. Are students enrolling in the program expected to be new to the university or redirected from other existing programs at the university? Complete the table below and explain the methodology used in developing the estimates?** Our methodology is based on two factors. First, we have had conversations with on-campus MBA students, and master’s degree students in computer science, who have expressed interest in a M.S. in Business Analytics. Second, our experience with our undergraduate program in operational analytics, and with our MBA business analytics specialization, have informed our growth estimates.

Estimates	Cohort Years*			
	1 <sup>st</sup>	2 <sup>nd</sup>	3 <sup>rd</sup>	4 <sup>th</sup>
	FY 18-19	FY 19-20	FY 20-21	FY 21-22
Students new to the university	2	5	10	18
Students from other university programs	3	3	3	3
Continuing students				
=Total students in the program (fall)	5	8	13	21
Program credit hours (major courses)**	150	240	390	630
Graduates	4	7	12	19

\*Do not include current fiscal year.

\*\*This is the total number of credit hours generated by students in the program in the required or elective program courses. Use the same numbers in Appendix B – Budget.

- 10. Is program accreditation available? If so, identify the accrediting organization and explain whether accreditation is required or optional, the resources required, and the University’s plans concerning the accreditation of this program.**

The M.S. in Business Analytics program will be accredited by the AACSB. There will be some incremental burden, because there will be additional courses to assess. But the burden will be no greater than the proportional burden of any new courses.

- 11. Does the University request any exceptions to any Board policy for this program? Explain any requests for exceptions to Board Policy.**

None.

**12. Delivery Location<sup>16</sup>**

- A. Complete the following charts to indicate if the university seeks authorization to deliver the entire program on campus, at any off campus location (e.g., UC Sioux Falls, Capital University Center, Black Hills State University-Rapid City, etc.) or deliver the entire program through distance technology (e.g., as an online program)?**

	Yes/No	Intended Start Date
On campus	Yes	Summer 2018

<sup>16</sup> The accreditation requirements of the Higher Learning Commission (HLC) require Board approval for a university to offer programs off-campus and through distance delivery.

	Yes/No	If Yes, list location(s)	Intended Start Date
<b>Off campus</b>	No		
	Yes/No	If Yes, identify delivery methods <sup>17</sup>	Intended Start Date
<b>Distance Delivery (online/other distance delivery methods)</b>	No		

**B. Complete the following chart to indicate if the university seeks authorization to deliver more than 50% but less than 100% of the certificate through distance learning (e.g., as an online program)?<sup>18</sup>**

	Yes/No	If Yes, identify delivery methods	Intended Start Date
<b>Distance Delivery (online/other distance delivery methods)</b>	No		

**13. Cost, Budget, and Resources:** Explain the amount and source(s) of any one-time and continuing investments in personnel, professional development, release time, time redirected from other assignments, instructional technology & software, other operations and maintenance, facilities, etc., needed to implement the proposed major. Address off-campus or distance delivery separately. See Appendix B. The program will be supported by existing resources and tuition revenue.

**14. Board Policy 2:1 states: “Independent external consultants retained by the Board shall evaluate proposals for new graduate programs unless waived by the Executive Director.” Identify five potential consultants (including contact information and short 1-2 page CVs) and provide to the System Chief Academic Officer (the list of potential consultants may be provided as an appendix). In addition, provide names and contact information (phone numbers, e-mail addresses, URLs, etc.) for accrediting bodies and/or journal editors who may be able to assist the Board staff with the identification of consultants.**

1. Dursun Delen, Ph. D. (willingness to serve confirmed) Regents Professor, Spears Chair in Business Administration, Patterson Foundation Chair in Business Analytics, Director of Research, Center for Health Systems Innovation, Department of Management Science and Information Systems, Spears School of Business, Oklahoma State University.
2. Allison Jones-Farmer, Ph.D, (tentative, depending on timing and requirements) Professor and Van Andel Chair of Analytics, Founding Director, Center for Analytics and Data Science, Information Systems & Analytics, Farmer School of Business, Miami University
3. Victor R. Prybutok, Ph.D., (willingness to serve confirmed) Vice Provost for Graduate Education, Dean of the Toulouse Graduate School, and Regents Professor, Information Technology and Decision Sciences, University of North Texas.
4. Nick Evangelopoulos Ph.D. (tentative, depending on timing and requirements) Professor, Department of Information Technology and Decision Sciences, University of North Texas, Fellow of the Texas Center for Digital Knowledge

<sup>17</sup> Delivery methods are defined in [AAC Guideline 5.5](#).

<sup>18</sup> This question responds to HLC definitions for distance delivery.

**15. Is the university requesting or intending to request permission for a new fee or to attach an existing fee to the program?**

Yes       No

*Explanation (if applicable):* All of the courses in this program will have the associated Business prefix fees. No new fees will be requested.

**16. New Course Approval: New courses required to implement the new graduate program may receive approval in conjunction with program approval or receive approval separately. Please check the appropriate statement:**

YES,  
*the university is seeking approval of new courses related to the proposed program in conjunction with program approval. All New Course Request forms are included as Appendix C and match those described in section 5D.*

NO,  
*the university is not seeking approval of all new courses related to the proposed program in conjunction with program approval; the institution will submit new course approval requests separately or at a later date in accordance with Academic Affairs Guidelines.*

## Appendix A – Outcomes

Individual Student Outcome	ACCT 511	DSCI 501	DSCI 505	DSCI 507	DSCI 519	BADM 720	DSCI 723	DSCI 724	DSCI 725	DSCI 726	DSCI 784	Elective
(1) Understand the vocabulary of business.	X	X										X
(2) Comprehend essential business analytics concepts.							X	X	X	X	X	
(3) Write analytics programs using common analytics programming languages.			X	X	X		X				X	
(4) Apply statistical methods expressed in software to convert data into knowledge.						X		X	X	X	X	
(5) Exhibit a commitment to ethical professional practice.	X	X						X				

## Appendix B – Budget and Resources

### The University of South Dakota, Master of Science in Business Analytics

#### 1. Assumptions

##### Headcount & hours from proposal

Fall resident headcount (see table in proposal)

Fall nonresident headcount (see table in proposal)

Program FY cr hrs, resident On-Campus

Program FY cr hrs, nonresident On-Campus

Program FY cr hrs, Off-Campus

	1st Cohort	2nd Cohort	3rd Cohort	4th Cohort
Fall resident headcount	3	5	8	13
Fall nonresident headcount	2	3	5	8
Program FY cr hrs, resident On-Campus	90	150	240	390
Program FY cr hrs, nonresident On-Campus	60	90	150	240
Program FY cr hrs, Off-Campus	0	0	0	0

Faculty, Regular FTE

See p. 3

0.00	0.00	1.00	1.00
------	------	------	------

Faculty Salary & Benefits, average

See p. 3

\$0	\$0	\$125,677	\$125,677
-----	-----	-----------	-----------

Faculty, Adjunct - number of courses

See p. 3

5	5	0	0
---	---	---	---

Faculty, Adjunct - per course

See p. 3

\$4,500	\$4,500	\$0	\$0
---------	---------	-----	-----

Other FTE (see next page)

See p. 3

0.00	0.00	0.00	0.00
------	------	------	------

Other Salary & Benefits, average

See p. 3

\$0	\$0	\$8,470	\$8,470
-----	-----	---------	---------

**2. Budget**

*Salary & Benefits*

Faculty, Regular		\$0	\$0	\$125,677	\$125,677
Faculty, Adjunct (rate x number of courses)		\$22,500	\$22,500	\$0	\$0
Other FTE		<u>\$0</u>	<u>\$0</u>	<u>\$0</u>	<u>\$0</u>
	S&B Subtotal	\$22,500	\$22,500	\$125,677	\$125,677

*Operating Expenses*

Travel		\$0	\$0	\$0	\$0
Contractual Services		\$0	\$0	\$0	\$0
Supplies & materials		\$0	\$0	\$0	\$0
Capital equipment		<u>\$0</u>	<u>\$0</u>	<u>\$0</u>	<u>\$0</u>
	OE Subtotal	\$0	\$0	\$0	\$0
	<b>Total</b>	<b>\$22,500</b>	<b>\$22,500</b>	<b>\$125,677</b>	<b>\$125,677</b>

**3. Program Resources**

Off-campus support tuition/hr, HEFF net	<table border="1"><tr><td>GR</td><td>\$393.16</td></tr></table>	GR	\$393.16	\$393.16	\$393.16	\$393.16
GR	\$393.16					
Off-campus tuition revenue	hrs x amt	\$0	\$0	\$0		
On-campus resident support tuition/hr, HEFF net	<table border="1"><tr><td>GR</td><td>\$278.51</td></tr></table>	GR	\$278.51	\$278.51	\$278.51	\$278.51
GR	\$278.51					
On-campus tuition revenue	hrs x amt	\$25,066	\$41,776	\$66,842		
On-campus nonresident support tuition/hr, HEFF net	<table border="1"><tr><td>GR</td><td>\$535.47</td></tr></table>	GR	\$535.47	\$535.47	\$535.47	\$535.47
GR	\$535.47					
On-campus tuition revenue	hrs x amt	\$32,128	\$48,192	\$80,320		
Program fee, per cr hr (if any)	<table border="1"><tr><td>\$51.75</td></tr></table>	\$51.75	\$4,658	\$7,763	\$12,420	
\$51.75						
Delivery fee, per cr hr (if any)	<table border="1"><tr><td>\$0.00</td></tr></table>	\$0.00	\$0	\$0	\$0	
\$0.00						
University redirections		\$0	\$0	\$0		
Community/Employers		\$0	\$0	\$0		
Grants/Donations/Other		\$0	\$0	\$0		
	<b>Total Resources</b>	<b>\$61,852</b>	<b>\$97,731</b>	<b>\$159,583</b>		

**Resources Over (Under) Budget**

	<b>\$39,352</b>	<b>\$75,231</b>	<b>\$33,906</b>	<b>\$131,637</b>
--	-----------------	-----------------	-----------------	------------------

*Provide a summary of the program costs and resources in the new program proposal.*

Estimated Salary & Benefits per FTE		Faculty	Other
Estimated salary (average) - explain below		\$102,507	\$0
University's variable benefits rate	(see below)	0.1434	0.1434
Variable benefits		\$14,700	\$0
Health insurance/FTE, FY18		<u>\$8,470</u>	<u>\$8,470</u>
<i>Average S&amp;B</i>		\$125,677	\$8,470

Explain faculty used to develop the average salary & fiscal year salaries used. Enter amount above.

The FY18 salaries of 7 people in the Decision Sciences department were averaged.

Explain adjunct faculty costs used in table:

5 courses per year, for the first two years, to be taught by adjuncts at \$4,500 per course.

Explain other [for example, CSA or exempt] salary & benefits. Enter amount above.

No other explanations are needed.

Summarize the operating expenses shown in the table:

The operating expenses are the ordinary costs to deliver the program.

Summarize resources available to support the new program (redirection, donations, grants, etc).

The program does not rely on redirection, donations, or grants.

State-support: Change cell on page 1 to use the UG or GR net amount.

Off-Campus Tuition, HEFF & Net	FY18 Rate	HEFF	Net	
Undergraduate	\$335.00	\$38.53	<b>\$296.48</b>	Change cell on page 1
Graduate	\$444.25	\$51.09	<b>\$393.16</b>	to point to your net
Externally Supported	\$40.00			

State-support: Change cell on page 1 to use the UG or GR net amount for your university.

On-Campus Tuition, HEFF & Net	FY18 Rate	HEFF	Net	
UG Resident - DSU, NSU, SDSU, USD	\$239.70	\$27.57	<b>\$212.13</b>	Change cell on page 1
UG Resident - BHSU	\$250.45	\$28.80	<b>\$221.65</b>	to point to your net
UG Resident - SDSMT	\$246.00	\$28.29	<b>\$217.71</b>	
GR Resident - DSU,NSU,SDSU,USD	\$314.70	\$36.19	<b>\$278.51</b>	Change cell on page 1
GR Resident - BHSU	\$323.35	\$37.19	<b>\$286.16</b>	to point to your net
GR Resident - SDSMT	\$320.05	\$36.81	<b>\$283.24</b>	



UG Nonresident - DSU,NSU	\$337.35	\$38.80	<b>\$298.55</b>	<i>Change cell on page 1</i>
UG Nonresident - BHSU	\$350.45	\$40.30	<b>\$310.15</b>	<i>to point to your net</i>
UG Nonresident - SDSU, USD	\$347.95	\$40.01	<b>\$307.94</b>	
UG Nonresident - SDSMT	\$385.30	\$44.31	<b>\$340.99</b>	
GR Nonresident - DSU,NSU	\$585.50	\$67.33	<b>\$518.17</b>	<i>Change cell on page 1</i>
GR Nonresident - BHSU	\$603.35	\$69.39	<b>\$533.96</b>	<i>to point to your net</i>
GR Nonresident - SDSU, USD	\$605.05	\$69.58	<b>\$535.47</b>	
GR Nonresident - SDSMT	\$642.35	\$73.87	<b>\$568.48</b>	
UG Sioux Falls Associate Degree	\$271.35	\$31.21	<b>\$240.14</b>	<i>Change cell on page 1 to point to your net</i>

#### Variable Benefits Rates

University	FY18	
BHSU	14.64%	<i>Change the benefits rate cell in the table on page 2 to point to the rate for your university.</i>
DSU	14.36%	
NSU	14.31%	
SDSM&T	14.20%	
SDSU	14.38%	
USD	14.34%	

*Rates updated August 2017 (JP)*

## Appendix C – New Course Requests

### Summer Semester

**ACCT 511 – Accounting and Finance Fundamentals** (3 Credit Hours) Explains financial ratios, financial statements, cost accounting basics, the time value of money, capital budgeting, asset pricing, financial risk and return.

**DSCI 501 – Marketing and Operations Fundamentals** (3 Credit Hours) Clarifies basic operations management by exploring analytics-based, decision-making models in production, planning, decision theory, project management and operations control methods. Additionally, connects operations to marketing, spanning the entire spectrum of goods production from supply chain management to customer relationship management. Includes decision making for products, pricing, distribution, and promotion.

**CSC/DSCI 505 – Business Analytics Fundamentals** (3 Credit Hours) An introduction to the basics of business data analytics programming, using current programming languages, such as R, Python and SQL, to store, retrieve, and transform data to create business data analytics applications.

**DSCI 507 – Business Analytics Modeling** (3 Credit Hours) Topics include business analytics programming and data management using SAS®, comprising import, export, and transformation of data from sources including SQL databases. Explores the creation of basic reports using SAS® procedures for the identification and correction of data, syntax and logic errors. Use of Base SAS® as general-purpose programming language. Assists students preparing for the Base SAS® Programming Certification Exam.

**DSCI 519 – Advanced Business Analytics Modeling** (3 Credit Hours) Applies advanced SAS® programming techniques to create efficient programs for the analysis of business data. Extensive SQL use, along with programmatic use of arrays, hashing and memory management within SAS® environments. Assists students preparing for the Advanced SAS Programming Certification Exam.

**DSCI 784 – Capstone Project** (3 Credit Hours) An experiential course where students complete a project using their skills in data preparation, modeling, statistical learning, data management and mining, to transform data into knowledge-based insights. Projects will be based on actual problems faced by organizations in the business community.

### Course Sequence

Summer Start:

Semester	STEM Baccalaureates	Bus / Econ Baccalaureates	Cr Hrs	Initial
Summer	<b>ACCT 511 Accounting and Finance Fundamentals</b>	<b>DSCI 505 Business Analytics Fundamentals</b>	3	18SU
Summer	<b>DSCI 501 Marketing and Operations Fundamentals</b>	Elective	3	18SU
Summer	DSCI 724 Data Mining for Managers	DSCI 724 Data Mining for Managers	3	18SU
Fall	Elective	<b>DSCI 507 Business Analytics Modeling</b>	3	18FA
Fall	DSCI 723 Data Management and Warehousing	DSCI 723 Data Management and Warehousing	3	18FA
Fall	DSCI 725 Data Mining for Competitive Advantage	DSCI 725 Data Mining for Competitive Advantage	3	18FA
Fall	BADM 720 Quantitative Analysis	BADM 720 Quantitative Analysis	3	18FA
Spring	DSCI 726 Operational Analytics	DSCI 726 Operational Analytics	3	19SP
Spring	DSCI 519 Advanced Business Analytics Modeling	DSCI 519 Advanced Business Analytics Modeling	3	19SP
Spring	DSCI 784 Capstone Project	DSCI 784 Capstone Project	3	19SP
Total:			<b>30</b>	

Key: **Courses specific to STEM Baccalaureates**  
**Courses specific to Business / Economics Baccalaureates**

Notes:

Dependency sequences:

**DSCI 505, DSCI 507**, and DSCI 519

**DSCI 501**, and Approved Elective Courses BADM 760, BADM 770

**ACCT 511**, and Approved Elective Courses ACCT 517, ACCT 781 or BADM 710

DSCI 724, DSCI 725, and DSCI 726

There is no penalty for **STEM** graduates who take **DSCI 507**, but if they do not take it as an elective, it will add to their hour count.

## Diagrammatic Representation

