PROGRAM COMPONENT (Group B) OR NON-SUBSTANTIVE MINOR REQUEST FORM
Short Form

Instructions: Please use one form for each request/action. Clearly mark all changes using Track Change or strikethroughs for deletions and underlines for additions. Following the approval of the appropriate college curriculum committee, a single representative for the college will e-mail the completed form to the Office of the Provost and Executive Vice President, provost@uidaho.edu for approval and then submission to the Academic Publications Editor in the Registrar's Office for review by the University Curriculum Committee (UCC).

Deadline: This form must be submitted to the Office of the Provost and Executive Vice President by December 15th for inclusion in the next available General Catalog and to be available for scheduling beginning with the next summer session.

When applicable a Curriculum Change Form and Course Approval Forms must accompany the short form when submitted to provost@uidaho.edu

Submission Information
This section must be completed

<table>
<thead>
<tr>
<th>College:</th>
<th>Science</th>
</tr>
</thead>
<tbody>
<tr>
<td>Department/Unit:</td>
<td>Statistical Science</td>
</tr>
<tr>
<td>Dept/Unit Approval Date:</td>
<td>November 17, 2016</td>
</tr>
<tr>
<td>College Approval Date:</td>
<td>December 7, 2016</td>
</tr>
<tr>
<td>CIP code (Consult Institutional Research):</td>
<td></td>
</tr>
<tr>
<td>Primary Point of Contact (Name and Email):</td>
<td>Chris Williams (<a href="mailto:chrisw@uidaho.edu">chrisw@uidaho.edu</a>)</td>
</tr>
</tbody>
</table>

Rationale and Overview of Program Component Request or Name Change
This section must be completed

Provide the rationale and overview of this request. Include an explanation of how the department will manage the added workload for a new program component; describe whether the program component curriculum and admissions requirements remain the same; describe the rational for a name change or degree designation change if applicable.

The Graduate Data Analytics certificate is intended to train students to manage and analyze data, and interpret results from data analyses, particularly from large data sets. The certificate leverages the expertise from faculty in several units to give students a strong interdisciplinary background in this emerging area. Each of the three units involved in the required courses (Statistical Science, Computer Science, and Business) have allocated resources to allow their new course to be offered on a regular basis.

Name or Degree Change Only Requests
Leave blank if not making a name and/or degree change only request

This section to be completed ONLY for changes to the name of: degree, major, minor, option, emphasis, certificate, teaching endorsement. If there are accompanying curriculum or course changes, complete the next section and attach the curriculum and/or course forms. **Note: a substantive change to a program degree, major, or program component may require a program proposal form.

<table>
<thead>
<tr>
<th>Current Name:</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>New Name:</td>
<td></td>
</tr>
<tr>
<td>Current Degree:</td>
<td></td>
</tr>
<tr>
<td>New Degree:</td>
<td></td>
</tr>
<tr>
<td>Other Details:</td>
<td></td>
</tr>
<tr>
<td>Effective Date:</td>
<td></td>
</tr>
</tbody>
</table>
**Program Component Request**

Leave blank if not adding, discontinuing, or modifying a program component. Program components consist of option, emphasis, minor, academic certificate less than 30 credits, or teaching endorsement.

Clearly mark all changes to existing program components by using Track Change or strikethroughs for deletions and underlines for additions. A curriculum change form and/or course approval forms associated with this request are required to be submitted with this short form.

<table>
<thead>
<tr>
<th>Create New:</th>
<th>x</th>
<th>Modify:</th>
<th>Discontinue:</th>
<th>Implementation Date:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Graduate Level:</td>
<td>x</td>
<td>Undergraduate Level:</td>
<td>Law Level:</td>
<td>Credit Requirement:</td>
</tr>
</tbody>
</table>

If the request is for an option or emphasis enter the associated major and degree:

<table>
<thead>
<tr>
<th>Major:</th>
<th>Degree:</th>
</tr>
</thead>
</table>

Enter the name of the program component in the appropriate row:

<table>
<thead>
<tr>
<th>Option:</th>
<th>Emphasis:</th>
<th>Minor:</th>
<th>Academic Certificate less than 30 credits:</th>
<th>Teaching Endorsement (Major/Minor):</th>
</tr>
</thead>
</table>

**Learning Outcomes and Assessment Information**

This section must be completed if program component request section is completed.

1. List the intended learning outcomes for the program component, using learner centered statements that indicate what will students know, be able to do, and value or appreciate as a result of completing the program:

   1. The student will be able to access data from a variety of formats, including large data sets
   2. The student will be able to manage (large) data sets, and use data visualization methods to understand data
   3. The student will be able to competently analyze (large) data sets and work with subject matter experts to draw valid inferences from fitted models.

2. Describe the assessment process that will be used to evaluate how well students are achieving the intended learning outcomes of the program component:

   Each course will have their own learning outcomes which will be assessed within their unit. Learning outcomes for the three required courses will each include at least one of the three certificate learning outcomes listed above. Required courses will each include some type of project or presentation to allow students to demonstrate competence with learning outcomes. For example, for the second outcome of managing and visualizing large data sets, students could be given a data set and a rubric could be developed to measure how well they managed the data and how thoroughly they used visualization to understand it. Additionally, faculty from the different departments will meet on a yearly basis to discuss the courses, their learning outcomes, and what measures are being used to assess learning outcomes in each course. Separate conversations will be held with departments teaching elective courses for the certificate, to coordinate with them on assessing the learning outcomes for the certificate.

3. How will you ensure that the assessment findings will be used to improve the program?

   Findings from direct and indirect measures will lead to suggested changes in the courses, which will be implemented when the courses are next offered.

4. What direct and indirect measures will be used to assess student learning?

   Direct measures will include student presentations and projects. Indirect measures will include course grades and feedback from exit interviews and course evaluation information from students.

5. When will assessment activities occur and at what frequency?

   Courses are mostly offered yearly, so assessment activities will occur on a yearly cycle. Additionally, faculty from the different departments will meet on a yearly basis to discuss the courses.
**Financial Impact**
This section must be completed if program component request section is completed

<table>
<thead>
<tr>
<th>Greater than $250,000 per FY:</th>
<th>Less than $250,000 per FY:</th>
<th>X</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brief Description of financial impact:</td>
<td>Each unit offering a required course (Statistical Science, Computer Science, and Business) has allocated teaching capacity to be able to offer their course on a regular basis.</td>
<td></td>
</tr>
</tbody>
</table>

**Distance Education Availability**
This section must be completed if program component request section is completed

To comply with the requirements of the Idaho State Board of Education (SBOE) and the Northwest Commission on Colleges and Universities (NWCCU) the University of Idaho must declare whether 50% or more of the curricular requirements of a program may be completed via distance education. **If the program component is to be offered via distance education, additional or different formwork may be required.** Contact provost@uidaho.edu for assistance.

The U.S. Department of Education defines distance education as follows:
*Distance education means education that uses one or more of the technologies listed below to deliver instruction to students who are separated from the instructor and to support regular and substantive interaction between the students and the instructor, either synchronously or asynchronously. The technologies may include--*

1. The internet;
2. One-way and two-way transmissions through open broadcast, closed circuit, cable, microwave, broadband lines, fiber optics, satellite, or wireless communications devices;
3. Audio conferencing; or
4. Video cassettes, DVDs, and CD-ROMs, if the cassettes, DVDs, or CD-ROMs are used in a course in conjunction with any of the technologies listed in paragraphs (1) through (3).

<table>
<thead>
<tr>
<th>Can 50% or more of the curricular requirements of this program component be completed via distance education?</th>
<th>Yes*</th>
<th>X</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>*If Yes, can 100% of the curricular requirements of this program component be completed via distance education?</td>
<td>Yes</td>
<td>No</td>
<td>X</td>
</tr>
</tbody>
</table>

**Geographical Area Availability**
This section must be completed if program component request section is completed

Identify the geographical area(s) this program component can be completed in:

<table>
<thead>
<tr>
<th>Moscow</th>
<th>X</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coeur d’Alene</td>
<td></td>
</tr>
<tr>
<td>Boise*</td>
<td></td>
</tr>
<tr>
<td>Idaho Falls*</td>
<td></td>
</tr>
<tr>
<td>Other**</td>
<td>Location(s):</td>
</tr>
</tbody>
</table>

*Note: Programs offered in regions 3, 4, and/or 5 may require additional formwork from the State Board of Education. Contact the Office of the Provost and Executive Vice President for additional information.

**Note: If Other is selected identify the specific area(s) this program component will be offered.
The Graduate Data Analytics certificate is intended to train students to manage and analyze data, and interpret results from data analyses, particularly from large data sets. The certificate leverages the expertise from faculty in several units to give students a strong interdisciplinary background in this emerging area. In addition to existing requirements for a Graduate Academic Certificate:

**Prerequisites:**
STAT 431 or an equivalent course.
Experience with statistical software or programming equivalent to the background of a student completing STAT 431.

**Required Coursework:**
- CS 456    Data Science    (3 cr)
- MIS 455/555 Data Management for Big Data    (3 cr)
- STAT 517 Statistical Learning and Predictive Modeling    (3 cr)

**Also one of the following (3 cr):**
- BCB 510    Computational Science for Biologists    (3 cr)
- BCB 511 Applied Bioinformatics    (3 cr)
- CS 472/572 Evolutionary Computation    (3 cr)
- CS 476/576 Machine Learning    (3 cr)
- MKTG 431 Marketing Analytics    (3 cr)
- STAT 456 Quality Management    (3 cr)
- STAT 507 Experimental Design    (3 cr)
- STAT 519 Multivariate Analysis    (3 cr)
- STAT 565 Computer Intensive Statistics    (3 cr)

*Note: Credits to total 12 for this graduate academic certificate. At least half of the credits must be at the graduate level.*
12/03/2016
RE: Participation in the Analytics Certificate

Dear Chris,

As Chair of the Department of Business in the College of Business and Economics I am honored to have the college and department participate in the proposed Graduate Certificate in Analytics. This certificate will provide a means for faculty from our two departments and others to collaborate on an important emerging area. We are committed to offer the following courses at least once per year for up to three years based on an annual review of student participation and comment:

BUS439 (will become OM439) Systems and Simulation
BUS/SATS456 (will become OM/STATS456) Quality Management
MIS455/555 Data Management for Big Data
MKTG431 Marketing Analytics

We will also consider the possibility of recording the course, which would allow the certificate to be made available to distance students.

Sincerely,

[Signature]

Dr. Scott Metlen
Department Head of the Department of Business