20 November 2017 - CORRECTION

TO: Sarah Mangelsdorf, Provost
FROM: John Karl Scholz, Dean
CC: Greg Downey, Associate Dean for Social Science, L&S
Kristin Eschenfelder, Professor and Director, School of Library and Information Studies
Marty Gustafson, Assistant Dean, Graduate School
William Karpus, Dean, Graduate School
Elaine Klein, Associate Dean for Academic Planning, L&S
Sarah Kuba, Academic Planner, Academic Planning and Institutional Research
Lisa Martin, Associate Dean, Graduate School
Jocelyn Milner, Associate Provost and Director, Academic Planning and Institutional Research
James Montgomery, Associate Dean for Fiscal Initiatives, L&S
Parmesh Ramanathan, Associate Dean, Graduate School
Yazhen Wang, Professor and Chair, Statistics
Nancy Westphal-Johnson, Associate Dean for Academic Administration
Eric Wilcots, Associate Dean for the Natural and Mathematical Sciences
Michael Xenos, Professor and Chair, Communication Arts

On November 7, 2017, the L&S Academic Planning Council considered the attached request to create a new graduate level capstone certificate program in “Data Analytics for Decision Making.” This nine-credit professional program will be coordinated by the School of Library and Information Studies, which will work with the Department of Computer Sciences to present this program to working professionals who seek to become “data savvy managers” rather than data scientists or statisticians. The part-time program will be delivered online to students, in cohorts that begin in any term in which LIS 705 will be taught. Students will enroll in three courses (one per term) over three terms, and should easily be able to complete the program within a calendar year. Our colleagues have worked closely with the Division of Continuing Studies, which has supplied market research that suggests that this non-pooled tuition program will be able to enroll students at levels that will allow it to be self-supporting; SLIS has extensive experience with such programs, and we are confident that the program will be well administered and students will be well served.

All details related to program design, student services, assessment of student learning, and more are provided in the attached proposal, which the L&S APC unanimously and enthusiastically approved. We hope subsequent approvals and timely implementation might allow the first cohort to be admitted in Spring 2019.
INSTRUCTIONS FOR PROPOSING CAPSTONE CERTIFICATES and USE OF PROPOSAL FORM

A Capstone certificate program is a designated set of for-credit courses focused upon a specific topic or theme that give students the opportunity to pursue a subject of interest in a formalized way that is documented on the transcript. Capstone certificates are designed to offer a focused educational experience in a format that is friendly to working professionals. The curriculum may represent a more practice-oriented subset of an existing graduate discipline or field of study.

PLANNING THE CAPSTONE CERTIFICATE

• Planning starts with idea development among the program faculty and staff.
• Begin to fill out the Capstone Certificate Proposal Form.
• When your ideas are starting to take shape, consult with your school/college dean’s office. Non-pooled Capstone certificates should also contact the school/college budget officer. If you aren’t sure who to talk to in your school/college dean’s office or if you have questions and want to discuss your plans, contact Jocelyn Milner, Director of Academic Planning and Institutional Research.
• When you have a full draft of a completed Capstone Certificate Proposal Form, and ideally before school/college approval, send the proposal to Jocelyn Milner and Graduate School Assistant Dean Marty Gustafson for a check-in and proposal review. This will help make sure that the certificate meets all components of the UAPC guidelines and will identify any implementation questions.

APPROVAL STEPS FOR CAPSTONE CERTIFICATES

1. The program faculty who are sponsoring the Capstone certificate program (most often the faculty or executive committee in a department) formally approve the certificate proposal.

2. The school/college that houses the certificate considers the certificate for approval, usually at the school/college Academic Planning Council.

3. After school/college approval, the dean forwards the proposal to the provost and the dean of the Graduate School with a copy to the director of Academic Planning and Institutional Research and the Graduate School Assistant Dean for Academic Planning and Assessment.

4. The Graduate Faculty Executive Committee considers the certificate for approval.

5. The provost will seek a recommendation for approval from the University Academic Planning Council.

FOR INFORMATION AND FORMS: http://apir.wisc.edu/certificates.htm

At this URL you will find links to the following information:

• Detailed instructions and the Capstone Certificate Proposal Form
• Capstone Certificate Guidelines, which is the policy framework for the proposal form (adopted April 2013)
• Certificate Knowledge Base - The KB houses certificate forms and frequently asked questions.

QUESTIONS: Sarah Kuba, Academic Planner, APIR (sarah.kuba@wisc.edu)
Jocelyn Milner, Director, Academic Planning and Institutional Research (jocelyn.milner@wisc.edu)
Capstone certificates are available to University Special (non-degree seeking) students who hold a bachelor’s degree or equivalent credential from an accredited college or university and are designed to offer a focused professionally oriented educational experience. This form is to be used in concert with the Capstone certificate guidelines. Complete the form and save as a Microsoft Word document.

1. **Capstone certificate name and academic home**
   1.1. Capstone certificate name: Data Analytics for Decision Making (ADM)
   1.2. Home Department/Academic Unit (Name/UDDS): Information School/A485100
       
       *The home department/academic unit is responsible for the academic oversight, delivery, and administration of the certificate.*
   1.3. Home School/College: Letters and Science, College of
   1.4. Additional Department(s)/Academic unit(s) information, if relevant:
       affiliate departments:
   1.5. Faculty director of the Capstone certificate program (name, title email): Kristin Eschenfelder, Professor and Director Information School, eschenfelder@wisc.edu
   1.6. Primary Capstone certificate program contact (name, title, email): Jenny Greiber, Certificates Coordinator, jgreiber@wisc.edu
   1.7. Primary school/college dean’s office contact (name, title, email): Elaine Klein, Assistant Dean, elaine.klein@wisc.edu
   1.8. Date form completed: 3/18/2016

2. **Approval, Implementation, and Review**
   2.1. School/College Approval Date: Click here to enter a date.
   2.2. GFEC Approval Date: Click here to enter a date.
   2.3. UAPC Approval Date: Click here to enter a date.
   2.4. Expected first term of student enrollment (usually 2-3 terms after UAPC approval; typically the following Fall term): Spring 2019
   2.5. Year of three year progress report to GFEC (3 years after first student enrollment): Spring 2022.
   2.6. Year of first program review (5 years after first student enrollment): Spring 2024.
   2.7. Are all academic programs in the home academic unit are up to date for program review? Yes
       If no, please provide an explanation:
       n/a

**Information to be completed by RO and APIR:**
- Plan Code (assigned by the Registrar’s Office):
- CIP Code (assigned by Academic Planning and Institutional Research):
- Primary Divisional Disciplinary Assignment (assigned by APIR for analysis purposes only):

3. **Purpose, rationale, justification**
Describe the purpose, rationale, and justification for the Capstone certificate:

3.1. What is the purpose of the Capstone certificate program? How does it contribute to the mission of the sponsoring unit(s)?

Describe the purpose of the Capstone certificate here. (1000 word limit)

Purpose: Data Analytics for Decision Making (ADM) is a revenue generating capstone certificate degree aimed at online audiences of working professionals from a wide variety of backgrounds. The goal of the certificate is to create data savvy managers rather than data scientists or statisticians. The certificate will provide entry level, applied knowledge of data analysis, data visualization, data communications, data management and data mining methodologies framed within the context of practical organizational decision making. The certificate will emphasize using data from social media sources, publicly available data sets, and identifying and critiquing data sets from student’s own organizations. The certificate will prepare working professionals to be wise consumers of data by increasing their understanding of the limits and assumptions of data sets, data analysis tools, and statistical tests. It will also prepare them to develop introductory to intermediate data products, and to work with statistical/data science professionals on more advanced projects.

The target audience for ADM is working adults who cannot leave their jobs and family to relocate for educational purposes but who seek to increase their education and skills in order to advance their careers or switch fields. The ADM certificate can be completed online, with weekly participation, within one calendar year allowing for balance of education, work and life. The certificate is a smaller commitment than a full masters degree, and in contrast to many existing analytics degrees, the ADM certificate does not have any statistical, math or computer science prerequisites.

The curriculum is customized to the audience of working adults and will emphasize use of data and data analysis for organizational management and planning purposes. The curriculum will prepare students to: develop answerable research questions that will address current organizational strategic goals, ongoing challenges, or common industry benchmarks; find and understand the limits of current organizational, public or commercial data sources; apply a range of commonly used quantitative and qualitative data collection and analysis methodologies (including those that draw on social media data); develop better data management processes in order to support future data driven activities, and explore and summarize large datasets using data visualization tools with text and graphics to support organizational decision making.

As described further below in the competitive analysis section, the ADM certificate is aimed at students who do not meet the math, programming or statistical prerequisites required by other programs. The certificate is not appropriate for students who wish to become data scientists, a path which requires more math, programming and statistical prerequisites.

Relation to mission: ADM will draw on expertise of faculty affiliates from departments on campus with expertise in data analysis (both qualitative and quantitative), data mining, data management and communciation of data to audiences.

For non iSchool faculty/staff, the iSchool will employ MOUs to ensure clarity about program instructional expectations and compensation for instruction or curricular development (see attached example). It is standard L&S practice for 131 instructional programs to employ MOUs in this way. All MOUs are to be developed in consultation with L&S Administration, and will necessarily involve consultation with departments (and when courses are recruited from outside L&S, dean’s offices of other schools/colleges as needed).
The combination of faculty/staff expertise from across academic units will generate a unique educational experience by bringing together teaching expertise in statistics, organizational planning, assessment, information visualization and communications, data management and introductory data mining. This set of educational opportunities is not currently available in any one department. The iSchool currently has agreements with Communication Arts and Biometry to field instructors in ADM and co-promote ADM. Conversations with the School of Business about participation in the certificate are ongoing.

The iSchool will run the certificate, but consult with program affiliates who teach or developing curricular materials, on changes to the following:

- The academic vision,
- Pedagogical and instructional guidelines,
- Learning outcomes of the certificate,
- Major changes to the curriculum, the learning outcomes, or changes to courses that impact the overall learning outcomes or the content of other courses, and
- Budgets, tuition, enrollment levels, instructor recruitment processes and levels of TA or grader support.

Participation in the certificate will provide participating faculty access to new students who would not otherwise attend UW-Madison and new contacts in a variety of organizations. These increased connections may increase employment opportunities for campus students and give faculty new connections for research.

Participation in the certificate will give partner departments an opportunity to learn about online revenue generating programs, online classes and fielding classes for part-time professional audiences.

Participating faculty will earn revenue for their departments from courses they field in the program based on the ADM revenue sharing model, or if their department fields an alternative instructor (see MOU). Exact revenue earned by will vary based on enrollments and instructional costs of the class. Affiliates can also earn revenue by developing and maintaining instructional materials, or appearing as an occasional guest lecturer in a course, even if they do not act as instructor of record.

The ADM certificate could serve as a pipeline to other graduate programs on the UW-Madison campus as graduate credits earned in ADM are potentially transferable into a masters degree. The iSchool curriculum committee voted to accept credits earned in the ADM program into the iSchool MA program (for students who are accepted into the MA) on March 1, 2017. The iSchool Executive Committee approved this action on April 12, 2017.

3.2. What is the evidence that there is a student demand for the Capstone certificate program?
Division of Continuing Studies contracted for a market study by Hiebing in summer 2014 to investigate market demand for ADM. The report compared (a) intent to enroll and (b) willingness to pay of the ADM certificate compared with three existing successful UW Madison certificates in Geographical Information Systems, Actuarial Science and Clinical Nutrition. Results of the Hiebing study for ADM showed strong interest and intent to enroll and a high willingness to pay compared to the existing successful benchmarks.
In addition, Eschenfelder spoke with representatives from American Family Insurance who expressed interest in supporting employees to pursue the certificate as it would directly benefit work at the organizations. They reported that several current Am Fam employees are pursuing the UW-System Data Analytics online masters degree (http://datasciencedegree.wisconsin.edu/). The ADM certificate would offer a shorter and cheaper alternative for Am Fam staff than the System complete masters degree that requires programming prerequisites.

The iSchool conducted a market analysis in summer 2015, 2016 and spring 2017 of online analytics certificate programs that offered graduate credit (transferable into a Masters) and found that comparable certificates are priced between $600 and $900 per credit. For this reason, we propose to begin with the $800 per credit tuition level. If market demand supports increasing the tuition to $1,100 per credit we will do so in the second or third year.

Online Graduate capstone certificates listed from least to most expensive per credit:
1. Indiana University Bloomington, College of Informatics Certificate in Data Science
   $650 a credit (listed at $1300 a credit but website advertises that everyone who applies gets a 50% discount)
   12 credits or $7800 total cost of program

2. University of Maryland, Continuing Studies, Certificate in Business Analytics
   $694 per credit
   12 credits or $8328 total cost of program

3. Penn State, World Campus, Certificate in Business Analytics
   $930 per credit
   9 credits or $8370 total cost of program

4. Oklahoma State, Certificate in Data Mining
   $429 in state and $1044 out of state per credit
   12 credits or $12,528 total cost of program out of state

5. Stanford Certificate in Data Mining and Applications
   $1120 per credit
   9 credits or $10,080 total cost of program

Peer programs report significant competition from the numerous very inexpensive non credit options in introductory analytics. Non credit certification is available from UC Irvine, University of Washington, Northwestern, and Michigan State). Conversation with program chair at IU Bloomington confirmed that non credit programs are their largest competitor with many students preferring a lower price and no graduate credit.

We also examined full masters degrees in Data Analytics. Pricing for full masters degrees is highly variable with the UI Bloomington and UW System masters on the low end and the UC Berkeley programs on the high end.

Indiana Bloomington MS in Data Science, 30 credits, total cost of program $21,457.00 ($715 per credit) Prerequisites: none listed
UW System Cooperative MS in Data Science, 39 credits, total cost of program $29,700 ($761 per credit) Prerequisites: elementary statistics, introductory computer programming, and introduction to databases.

UC Berkeley School of Information MS in Information and Data Science, 27 credits, total cost of program $ 62,991 ($2333 per credit) Prerequisites: knowledge of a high-level object-oriented language such as Python, Java, or C++.

3.3. What is the evidence that there is a market demand for graduates of the Capstone certificate program?
The Division of Continuing Studies (DCS) market report found that occupations related to analytics and data analysis are expected to grow faster than the average of all occupations in the United States. For example, market research analysis positions are expected to increase by 32% by 2022. Bureau of Labor Statistics reports that Management Analyts positions will rise by 9%.

DCS interviews with employers emphasized the need for employees with applied research skills such as "using statistics in a business setting" and "understanding if data are credible" and data communications skills such as information visualization and how to "persuade and influence" using data.

Proposals for new Capstone certificates must provide a demonstrated need for such a program: this provision must be defined in terms of external markets (i.e. external demand for the skills associated with such a certificate) and must describe how the Capstone certificate program will attract new student enrollments.

4. Curriculum
4.1. Delivery modality:
☐ Face-to-face  ☒ Distance  

Distance-delivered programs are those certificate or degree programs in which 50% or more of the required courses may be taken as distance-delivered courses.

4.2. Provide a complete list of requirements.
The capstone certificate will consist of 3 required courses (705, 706, 707). 705 must be taken before 706 and 707. Students can take 706 and 707 in any order. On completion of the three courses, the student will complete the certificate. Students are admitted on a rolling basis each time 705 is taught. We plan to run 705 twice a year and admit starting students in both the fall and spring. The certificate will allow students with prior approved coursework to apply to opt out of 705 and move directly to 706 and 707.

The courses have received all required approvals from related departments and all the courses were passed by L&S curriculum committee. 705 has completed the campus level approval process and is pending catalog import. 706 and 707 are in the queue at the University Curriculum Committee.

LIS 705: Introductory Analytics for Decision Making (3 credits): The entry course in certificate, 705 introduces students to the learning objectives of the certificate and the year long capstone project. Students increase their capacities to frame questions that can be informed by data, identify and assess the quality of existing data sources and plan a structured inquiry. Students learn about and apply
major data collection methodologies and are introduced to the basics of quantitative and qualitative analysis approaches.

LIS 706: Data Mining Planning and Management (3 credits - prereq 705): Prepares students to plan, manage and assess a data mining project in light of organizational strategic goals. Introduces stages of a data mining project, organizational data audits, metadata and data management concepts, data preparation techniques, data project evaluation and principles of data ethics. Students learn and apply introductory data mining tools and techniques for data clustering, dividing data into classes, making predictions, and identifying networks.

LIS 707: Data Visualization and Communications for Decision Making (3 credits - prereq 705): Students will gain competency with data visualization and communication to support decision making in organizational environments. They will master contemporary visualization tools to summarize, analyze and communicate about data. They will analyze stakeholders information and communications needs and preferences in order to develop effective data products. Students will be able to explain the limitations and challenges of using visualization techniques, understand and apply basic principles of design to create effective visualizations, and choose appropriate types of visualization(s) based on source data, audience, and goal. Students will evaluate visualizations created by others for effectiveness and bias. To complete the certificate capstone project, as part of this class students will apply data analysis, data visualization and data communications techniques learned in the certificate in order to plan and create a portfolio in which they employ data, texts, infographics and visualizations to help analyze and understand data in order to solve an organizational problem.

Program requirements should provide content that leads to the completion of Capstone certificate learning goals. See section 8 Assessment.

4.3. Chart student progression through the curriculum.

<table>
<thead>
<tr>
<th>Semester students will take the course</th>
<th>Department</th>
<th>Course Number</th>
<th>Course Title</th>
<th>Credits</th>
<th>Instructor</th>
<th>Semester &amp; year last taught</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spring 1</td>
<td>LIS</td>
<td>705</td>
<td>Introductory Analytics for Decision Making</td>
<td>3</td>
<td>Kim or TBD</td>
<td>n/a</td>
</tr>
<tr>
<td>Fall 1</td>
<td>LIS</td>
<td>706</td>
<td>Data Mining Planning and Management</td>
<td>3</td>
<td>Eschenfelder or TBD</td>
<td>n/a</td>
</tr>
<tr>
<td>Summer 1</td>
<td>LIS</td>
<td>705</td>
<td>Introductory Analytics for Decision Making</td>
<td>3</td>
<td>Mares or TBD</td>
<td>n/a</td>
</tr>
<tr>
<td>Summer 1</td>
<td>LIS</td>
<td>707</td>
<td>Data Visualization and Communication</td>
<td>3</td>
<td>Masemann or TBD</td>
<td>n/a</td>
</tr>
</tbody>
</table>

4.4. Total credits required: 9 credits.

Capstone certificate programs are usually 9 to 12 credits and may not be more than 15 credits.

4.5. Semesters to completion: The program can be completed in one calendar year: 2 regular semesters (fall/spring) and one summer session.
4.6. Describe the student progression (one-course per semester for several semesters, all courses taken in one intensive semester, other):

☒ Part-time (< 8 credits fall and spring semesters, < 4 credits summer term)

Students will take one course per semester for three semesters including a 14 week summer session.

☐ Full-time, time-compressed, intensive

Describe full-time format here. (100 word limit)

☒ Other

The courses will be online and will not require the student to travel to campus.

Checklist for Verification of Curricular Policy Requirements*

You will have an opportunity to provide explanation and rationale for any Curricular Policy Requirements that have not been affirmed in the text box that follows the check list, below.

☒ Courses for the Capstone certificate are numbered 300 or higher.

☒ Courses are offered on a regular basis (as identified in student progression chart in section 4).

☒ Courses have enrollment capacity for students in the Capstone certificate program.

☐ Courses in the proposed Capstone certificate have been approved.

☒ All of the Capstone certificate credits must be earned “in residence” (which includes on campus and distance-delivered courses) at UW-Madison while enrolled in the Capstone certificate program.

Because a Capstone certificate is comprised of just a few courses, it is not appropriate for students who already have completed the same or similar coursework at UW-Madison or another institution.

☒ Students must earn a minimum grade of C on all attempted Capstone certificate coursework.

☒ Courses in which a student elects the pass/fail option will not meet Capstone certificate requirements.

☒ All Capstone certificate program requirements must be met; waiving requirements is not permitted.

☒ Units must maintain Capstone certificate requirements so that they are up-to-date; all curriculum changes must be approved through the appropriate school/college academic planning council (APC) or curriculum committee. The school/college APC or curriculum committee will notify the Office of the Registrar, the Graduate School, and DCS-ACCSSS about approved curricular changes to the certificate. Typically, any changes in requirements will be effective no sooner than the fall semester after approval.

*Provide explanation and rationale for any Curricular Policy Requirements that have not been affirmed. Proposed courses have been submitted to the course proposal system. 705 and 707 are approved. 706 is currently under review at the campus level (approved by L&S).

5. Student Services & Advising

5.1. List the names of Capstone certificate program advisor(s) with title and departmental affiliation(s).

Ms. Jenny Greiber, Certificates Coordinator at the Information School will act as advisor. The position will be a program coordinator position as course choice advising will be light due to the lockstep nature of the program.

5.2. How will the resource load of the additional student services support and advising be met?

The certificate program coordinator will provide admissions, recruiting, student services and advising. The lockstep nature of the program will reduce course selection advising, but the program coordinator will provide career related advising and general student support. Advising about online learning will occur through the program community of practice site employing materials developed by DoIT.
academic technologies and piloted through the UX certificate program. A certificate TA will provide additional student support related to online learning technologies.

Do the individuals or offices have the capacity to add student services support for the Capstone certificate program? Does the program have the resources to support all aspects of advising and student support?

5.3. ☒ Confirm that program advisor(s) have been consulted and reviewed this proposal.

6. Admissions

6.1. Minimum bachelor’s degree GPA for admission to the Capstone certificate program (if relevant):
A minimum undergraduate grade-point average (GPA) of 3.00 on the equivalent of the last 60 semester hours (approximately two years of work).

6.2. List additional admission criteria:
Prior bachelors degree in any field.
English language proficiency examinations for non-native English speaker, current Graduate School minimums required
No prior coursework in statistics or research methods is required
No prior coursework in computer science is required
No GRE or MCAT is required

In order to provide greater flexibility and meet the needs of specific target student populations, each Capstone certificate program shall identify any tests and minimum scores (for example GRE and TOEFL where applicable), and other similar criteria required of applicants to the program. These elements must be clearly communicated to applicants and students. In planning, programs should give special attention to English-language proficiency for non-native English speakers and consider how proficiency will be determined in the admission process; ESL support is not generally available to students in Capstone certificate programs.

Checklist for Verification of Admission Policy Requirements*
You will have an opportunity to provide explanation and rationale for any Admission Policy Requirements that have not been affirmed in the text box that follows the checklist.

☒ Degree-seeking students may not be concurrently enrolled in a Capstone certificate program.
☒ To be eligible for admission to a Capstone program, a student must hold an earned bachelor’s degree or equivalent credential from an accredited college or university.
☒ Prospective Capstone certificate students apply to the University and are admitted through the Adult Career and Special Student Services office in the Division of Continuing Studies (DCS-ACSSS) in consultation with the Capstone certificate faculty program director or designee. Once admitted, Capstone certificate students carry a University Special student classification (UNCS). University Special students apply via an online application system by selecting the Capstone certificate program of choice from a program list on the application. DCS-ACSSS codes the applicant for that program and defers final admission until a decision is made by the Capstone program faculty/staff. DCS-ACSSS serves as the advising, admissions, and academic dean's office for all University Special students.

*Provide explanation and rationale for any Admission Policy Requirements that have not been affirmed in the above checklist.

n/a
7. Enrollment Planning and Marketing

7.1. Projected annual enrollment: The ADM certificate aims for an initial student pool of 40 per year. If demand is sufficient, the certificate will increase enrollment to up to 60 students per year. 

*Capstone certificates that will be supported by non-pooled tuition should project enrollments of at least 30 students; experience shows this is the threshold for generating sufficient revenue to meet direct program costs.*

7.2. Maximum enrollment that can be supported with existing instructional and student services resources: 40, or up to 60 with additional TA support.

7.3. Describe plans for supporting enrollments that are much higher or much lower than the anticipated enrollment.

Lower enrollments: The program has a 4 year plan. If enrollment targets are not met within three years, then the program will stop admissions and teach out any remaining students in the fourth year.

Higher enrollments: The program could support higher enrollments through the hiring of additional TAs to support the course instructors. If enrollment demand is higher than expected, we will seek to increase the certificate tuition to $1,100 per credit.

7.4. Will this Capstone certificate enroll international students? Yes

*Programs who will seek to enroll international students must plan accordingly. International students (any student who needs a UW I-20 for a student visa) may only enroll in a program if the Capstone certificate is offered full-time, if students are enrolled full-time, and if the program has been approved to receive international students by the US government. That approval process is conducted through the Office of International Student Services and can be initiated after academic approvals are complete; such approvals may take up to a year. Note that fully online programs are not subject to this restriction because international students do not need a visa.*

7.5. What is the marketing plan for the Capstone certificate?

The certificate staff will work with DCS to build a social media strategy including: an AYC landing page with analytics and auto-responses, Google ads, Linked In ads, Facebook ads, Twitter ads.

Website: the certificate will build a website, friendly to international audiences, that contains relevant program and contact information.

Alumni networks: the certificate will advertise itself through the alumni networks and newsletters of the partner programs that are fielding instructors and therefore have an interest in revenue generation.

Conferences: The certificate will advertise via relevant professional conferences and professional associations including professional associations (SLA, DAMA, AMIA)

Brochures: The certificate will print paper brochures that can be distributed to state businesses. The Advisory Council of the certificate will assist in advertising the program to other businesses through social networks and word of mouth.

8. Assessment

8.1. ☒ Attach an assessment plan when submitting this proposal. 

*See the Basic Assessment Plan for Capstone Certificates for instructions and the accompanying template. The Basic Assessment Plan and Template are minimum expectations for this information. Programs that have developed plans that exceed what is specified in the basic plan may provide that information.*

8.2. Provide a summary of the Capstone certificate’s assessment plan, including learning goals, key methods and assessment approaches, and how assessment information will be reviewed and acted on.

Learning Goals:
1. Students can formulate questions related to existing organizational goals or challenges, identify sources of data to answer those questions, and design and implement a data analysis plan to answer the questions.

2. Students will demonstrate competency with a range of data collection and analysis techniques and tools appropriate to organizational decision making and assessment including the basics of data mining and visualizations.

3. Students can effectively communicate the rationale for a data project and the results of their analysis across different types of media and using best practices of textual and visual communications.

4. Students can articulate the possible information value and the limitations of data and analytics projects based on understanding of data quality, data availability, metadata functionality and other data management issues.

Key Methods and Assessment Approaches:
The Certificate Coordinator is responsible for ensuring the assessment occurs and is reported in conjunction with the Certificates Director (faculty).

The primary means of direct assessment will be a portfolio which includes the major assignments from each of the three classes. An assessment team of instructors and the Certificates Coordinator will score each portfolio on the degree to which it shows evidence of each learning outcome. Summary data from assessment will be compiled and shared with instructors. The Coordinator and Certificate Director will use the data to propose improvements to the certificate.

9. Related Programs

9.1. This Capstone certificate will be offered as a: Capstone certificate only.

Students may not earn a Capstone certificate and Graduate/Professional Certificate of the same name. If the Capstone certificate will be offered as a Capstone certificate and a new Graduate/Professional certificate, a Graduate/Professional certificate proposal form must be completed.

9.2. Specify any other major/degree or certificate program that is related to this Capstone certificate.

This certificate is aimed at a more entry level and applied audience than students in the MS Statistics option Data Science and the proposed Masters of Engineering in Applied Computing and Engineering Data Analytics. The ADM certificate aims at an applied managerial audience and aims to produce data savvy managers, while the Statistics and Engineering programs aim to produce statisticians and engineers. The ADM certificate would not pull students from these programs as the ADM target market would not be qualified to enroll in those two programs.

Related programs include those that share a student audience, represent a closely related area of study, or have program names that are similar. These programs must provide a supporting memo (see required attachments). Capstone certificates supported using non-pooled tuition cannot compete with or draw students away from existing programs that support the central tuition pool.

10. Governance & Faculty

10.1. The Capstone certificate is governed by:

☒ Existing department and school/college governance committees
☐ New Capstone certificate governance committees

- If the Capstone certificate is governed by a new committee, define and outline governance structures and procedures for the certificate program.
Provide information on how program faculty are identified and provisions for transition in the faculty program director. Who will appoint the director and to whom will the director report?

10.2. List the core program faculty and staff with title and departmental affiliation(s) who are primarily involved and will participate in delivery and oversight of the Capstone certificate.

Certificate managers:
Kristin Eschenfelder, Professor and Director Information School, Faculty Director of the Certificate
Jenny Greiber, Certificates Coordinator, Information School

iSchool faculty/instructional staff participating in delivery of the program:
Kyung Sun Kim, Professor, Information School
Bronwen Masemann, Faculty Associate Information School
Louise Mares, Professor, Communication Arts

In addition, ADM plans to cultivate long term teaching relationships with expert practitioners who could contribute teaching to the program. The expertise and industry connections of these instructors will add value to student experience and contacts for employment. ADM will recruit these instructors through the social networks of the core faculty and staff and partner program alumni and board members.

11. Progress & Certificate Completion

11.1. Using ISIS, the faculty program director and staff will be able to identify University Special students enrolled in the Capstone certificate program.

11.2. Using DARS, the faculty program director and staff will monitor students’ progress in the Capstone certificate program.

11.3. The faculty program director will notify the degree audit department in the Registrar’s Department and DCS/ACSSS by email (degreeaudit@em.wisc.edu, kthomas@dcs.wisc.edu) when a student has completed all of the requirements for the Capstone certificate. When the certificate is completed, the program faculty director or designee must notify the Registrar’s Office in order for the Capstone certificate to be recorded on the official student record and for it to print to the transcript. If the program wishes to provide a physical certificate of completion for the student, they may do so.

11.4. Identify standards for good academic standing.
C grades must be earned on all coursework for the certificate program to complete the certificate. Pass/fail and audit options are not permissible. Incomplete (I) grades are unsatisfactory if they are not removed during the subsequent semester of enrollment; however, the instructor may impose an earlier deadline.
At a minimum, C grades must be earned on all coursework attempted for the certificate program. Academic standing is verified by the program faculty and staff. (Only graduate-level work from the Capstone certificate that is earned with a grade of B or better is eligible for subsequent application to a UW-Madison graduate degree minimum graduate-level credit requirement.)

12. Fiscal Structure and Ongoing Commitment

12.1. The Capstone certificate program will be supported using non-pooled tuition
12.2. For programs that will be supported using **standard general purpose revenue**, what resources are allocated or reallocated to the Capstone certificate program?

n/a

Is there a source of new funding? If the funding is from reallocation, what activities will be reduced as a result? Both the proposal from the program faculty and the school/college dean’s office cover memo should specify that the resource commitment is being made to the program.

12.3. For programs supported using **non-pooled tuition**, what resources are allocated to the Capstone certificate program?

To fund the start of the program, the iSchool will be investing start up funds earned from a different non-pooled tuition program (MA Library and Information Studies - Distance Option). The iSchool will also seek start up funds from DCS.

**Programs supported using non-pooled tuition must also submit the attachments listed in the required attachments section.**

12.4. For programs supported using **non-pooled tuition**, planned enrollment is expected to generate enough paid tuition to cover instructional costs, direct student support costs, and any other fixed or required costs. Although detailed fiscal plans are not required in the academic program proposal, it is helpful to provide the following summary taken from the non-pooled tuition budget:

**Fiscal Annual Summary**

Planned enrollment: 40 per year with the potential to go up to 60

- Estimated paid tuition: $288,000 (800 a credit @9 credits *40 students)

Core Instructional costs:

- Direct student support costs: $136,239 (49,839 of instruction costs ($16,612 academic staff salary + fringe * 3 courses) + $86,400 local administration)
- Overhead assessment/allocation: 32% tax ($80,640)
- Total costs: $216,879

Excess tuition available for reinvestment: $71,121

Briefly list planned reinvestment uses: scholarships for program students, support ongoing departmental needs.

12.5. The department or program will consider students enrolled in the Capstone certificate for departmental financial aid.

**Capstone certificate students cannot receive federal financial aid.**

12.6. ☒ Students enrolled in Capstone certificate programs are NOT eligible for teaching assistant (TA), research assistant (RA), project assistant (PA) nor graduate fellowship support. Programs must disclose this program policy to Capstone certificate students in the recommendation of admission letter, program website, program handbook, and program orientation.

12.7. ☒ The Capstone certificate program faculty are responsible for seeking appropriate governance approval for significantly altering the Capstone certificate’s curriculum, suspending admissions or discontinuing the certificate program.

12.8. ☒ The faculty/staff will make a three-year progress report to GFEC three years after first student enrollment.

12.9. ☒ The faculty/staff will engage in program review five years after implementation and at least once every ten years after that.

12.10. ☒ The program faculty/staff will ensure the program is encoded into DARS and will work with the Registrar’s Office DARS liaison to keep approved revisions to the curriculum current.
12.11. ☒ The program faculty/staff will ensure the program website and Advance Your Career materials are current and consistent across all locations where information is provided.

Required attachments

☒ Supporting letters/memos
  Provide letters or memos from other academic units that will have overlapping interest. This will include departments/schools/colleges that provide courses for the certificate, share a student audience, represent a closely related area of study, have overlapping faculty, or have program names that are similar.

☒ Assessment plan
  See the Basic Assessment Plan and Template for Capstone Certificates for detail. The Basic Assessment Plan for Capstone Certificates and the Template are posted at http://apir.wisc.edu/certificates.htm

Programs supported using non-pooled tuition must attach:

☒ Core Criteria Checklist

☒ Additional Requirements Checklist
  See the current “Non-pooled Program Requirements Process” document posted at http://apir.wisc.edu/academicplanning.htm
ASSESSMENT PLAN TEMPLATE
CAPSTONE CERTIFICATE PROGRAMS

This assessment plan template is meant to outline a systematic approach to reviewing the student learning experience for your capstone certificate program. A simple, straightforward assessment plan includes:

- **What** – What are students expected to learn?
- **Where** – Where in the curriculum are students expected to learn and apply the knowledge and skills specified as the learning goals?
- **How** – How do program faculty know (what is the evidence) that students are learning what they expect them to?
- **So What** – After reviewing the assessment activity findings (evidence), are students meeting the expectations? Validate or consider ways to improve.


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Capstone Certificate Program Name: Data Analytics for Decision Making (ADM)
Faculty Director Name, Contact information, Title: Kristin Eschenfelder, Professor and Director Information School (eschenfelder@wisc.edu)
Primary Program Contact Name, Contact information, Title: Jenny Greiber, Certificates Coordinator, Information School (jgreiber@wisc.edu)
Date this Assessment Plan was adopted by the iSchool program faculty: May 2016

**Student Learning Goals (What)**
Generally, capstone certificates have 3 to 5 learning goals. List the learning goals for this capstone certificate program below.

1. Students can formulate questions related to existing organizational goals or challenges, identify sources of data to answer those questions, and design and implement a data analysis plan to answer the questions.
2. Students will demonstrate competency with a range of data collection and analysis techniques and tools appropriate to organizational decision making and assessment including the basics of data mining.
3. Students can effectively communicate the rationale for a data project and the results of their analysis across different types of media and using best practices of textual and visual communications.
4. Students can articulate the possible information value and the limitations of data and analytics projects including data mining projects based on understanding of data quality, data availability, metadata functionality and other data management issues.

**Curriculum Map (Where)**
- **Learning Goals** – Enter the capstone certificate learning goals identified in the previous section on the top row of the following chart.
- **Capstone Certificate Program Courses** – List all capstone certificate requirements. Feel free to add rows as needed.
- Indicate where the course or learning experience contributes to each of the learning goals. Courses may contribute to multiple learning goals.

<table>
<thead>
<tr>
<th>Curriculum Map (Where)</th>
<th>Enter certificate-level learning goals and mark which course contributes to which learning goal.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Capstone Certificate Program Courses</strong></td>
<td>Learning Goal #1: Formulate, plan, implement</td>
</tr>
<tr>
<td>705 Introductory Analytics for Decision Making</td>
<td>X</td>
</tr>
<tr>
<td>706 Data Analysis and Data Mining Concepts</td>
<td>X</td>
</tr>
<tr>
<td>707 Data Visualization and Communications</td>
<td>X</td>
</tr>
</tbody>
</table>

*Add additional rows as needed to capture all requirements.*

<table>
<thead>
<tr>
<th>Assessment Planning (How)</th>
<th>Learning Goal #1: Formulate, plan, implement</th>
<th>Learning Goal #2: Data collection and analysis</th>
<th>Learning Goal #3: Data communications</th>
<th>Learning Goal #4: Data management and value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Method for assessing learning (at least one direct method required)</td>
<td>Portfolio consisting of final projects from the three required classes</td>
<td>Portfolio consisting of final projects from the three required classes</td>
<td>Portfolio consisting of final projects from the three required classes</td>
<td>Portfolio consisting of final projects from the three required classes</td>
</tr>
<tr>
<td>Timetable for assessment activity (at least one activity each year; all goals reviewed in a 3-year cycle)</td>
<td>Once per year for all students completing the certificate</td>
<td>Once per year for all students completing the certificate</td>
<td>Once per year for all students completing the certificate</td>
<td>Once per year for all students completing the certificate</td>
</tr>
</tbody>
</table>

*For examples of direct and indirect methods of assessment, see: [http://provost.wisc.edu/assessment/doing-assessment.htm](http://provost.wisc.edu/assessment/doing-assessment.htm).*

**Assessment Review and Reporting (So What)**

1. **Who is responsible for assessment?** (Identify a team, including at least one faculty member, who will coordinate the implementation of the plan on an annual basis):

The Certificate Coordinator is responsible for ensuring the direct measure assessment occurs and is reported in conjunction with the Certificates Director (faculty).
2. **What is the plan for review of the assessment information?** (At minimum, review will take place at an annual meeting of the program faculty and staff; note that at this meeting the program may want to review enrollment information, course progression, completion, and other features of the student experience. This is also a good time to review and update the certificate proposal or implementation form):

The primary means of direct assessment will be a portfolio in which students will include the final projects from each of the three classes. An assessment team of instructors and the Certificates Coordinator will score each portfolio on the degree to which it shows evidence of each learning outcome. Summary data from assessment will be compiled and shared with the certificate Program Committee.

3. **What is the plan for production of annual summary report?** (A summary of the materials forms the basis of the discussion at the annual meeting, the content of the discussion, and any recommendations):

The Certificate Coordinator and Director will produce a summary report for review by the ADM Program Committee that will contain draft recommendations. Annually, the ADM Program Committee will meet, review data and consider proposed changes to courses or the certificate structure or certificate goals. Program Committee members may also motion for other changes during the meeting based on their review of the data. Each year the data will include: PLO achievement, enrollments/progression/completion data, and surveys of employment of past year’s graduates. At least every other year the Program Committee will seek input from its industry advisory board.

4. **How will recommendations be implemented?** (explain the general process by which recommendations will be implemented):

Recommendations will be implemented by the ADM Program Committee voting to: change the content or courses or assignments, change the requirements for the capstone project and presentation, change marketing materials, change student support procedures. It will be the responsibility of the Director of the Certificate to ensure that the changes are implemented.

Use this form in conjunction with the “Basic Assessment Plan for Capstone Certificates” guidelines. For information on Capstone certificates see: http://apir.wisc.edu/certificates.htm For information on assessment see http://provost.wisc.edu/assessment/
APPENDIX A.  CORE CRITERIA CHECKLIST  
FOR ACADEMIC PROGRAMS WITH NON-POOLED TUITION  

1.  New and Additional Student Enrollments to Support Program Costs  

X The program must bring in NEW and ADDITIONAL students. Overall enrollment in all other school/college programs must not be eroded. The program cannot compete with or draw students away from existing programs that support the central tuition pool.  

X Faculty/staff must plan for sufficient enrollments to have enough tuition to cover instructional, direct student support costs, and any other fixed or required costs. Experience shows that enrollments of at least 30 students are necessary to have enough tuition to meet direct program costs.  

X School/college Budget Officers must be involved in planning and must approve plans and budgets for these programs before the program is submitted to the school/college APC for academic approval.  

2.  Designed for Non-Traditional Students  

X Has an applied, practice-oriented curriculum, or integrates practice with theory  

X Is offered in a modality that allows non-traditional audiences to attend (evening, weekend, online, intensive, or some combination)  

X Has defined learning goals that are oriented to market considerations  

X Has a clearly defined curriculum that is “self-contained”, meaning that program students are confined only to courses from the approved, prescribed curriculum  

X Has a clearly defined (often lockstep) curriculum with few options or electives that follows a predictable timeline for offerings and completion  

3.  Distinctly Identifiable Program (Code) With Governance Approval  

X The program must be distinctly identifiable in the student record system, either as a degree/major or as an option of a degree/major, or as a Capstone certificate.  

X The program must develop a proposal for the academic approval process, during which it must demonstrate that the school/college Dean and Budget Officer are aware and supportive of the program being run on a non-pooled tuition model.
APPENDIX B. ADDITIONAL REQUIREMENTS CHECKLIST
FOR ACADEMIC PROGRAMS WITH NON-POOLED TUITION

Use this checklist in conjunction with the Core Criteria Checklist

If core criteria are met, the program must adhere to the additional requirements below.
Note: Not all new programs are suited for the non-pooled program requirements. New programs that seek to take advantage of a wide range of course and curricular/program offerings on campus and are not market-oriented should be developed under traditional (101) pooled tuition funding models.

1. Fiscal Requirements:

X School/college budget officer has approved the budget and fiscal plan.

X School/college dean and budget officer are committed to assuming fiscal responsibility for costs not covered by non-pooled tuition to the program. The school/college will back up the budget with a commitment to cover any costs not met from tuition from other sources.

X The program structure fits within standard academic administrative structures and allocates expenses of the program so that the program does not create additional burdens on traditional/101 program resources or student services such as advising, ESL, Registrar’s Office, Bursar’s Office, Graduate School and other support services.

X Programs have two options for tuition. One option is to charge standard graduate tuition according to the UW-Madison tuition schedule. This includes standard rates for WI resident, MN, and non-resident students and any compulsory fees that apply. Or, for fully online programs, they have the option of charging all students one of tuition tiers (Appendix D). Although not currently allowed, it is potentially possible in the future the tiered tuition may be available to face-to-face programs.

X Because students who have graduate assistantships receive tuition waivers, some non-pooled tuition graduate degree programs choose to prohibit students from accepting a graduate assistantship (RA/TA/PA). If a program allows their students to take graduate assistantships they it must forgo the tuition revenue. To ensure full receipt of non-pooled tuition and to counter challenges from students, the program must adhere to the following:

X The program faculty/staff must disclose this program policy to students in the recommendation of admission letter, program website, program handbook, and program orientation.

X Please see Appendix E for links and Appendix F for a sample of a specific non-pooled program template for a recommendation of admission letter and a general template for a program handbook. The program faculty/staff must provide details on this and any other program policies the program
handbook in at least the following areas: satisfactory progress (good standing) requirements, any ways to return to good standing, and a program grievance process if done does not already exist.

2. Requirements for International Students:

X Programs may not admit students who need ESL services without building sufficient ESL support into their fiscal model, and having an explicit MOU with the ESL provider about funding to support the ESL services.

X Graduate degree/major programs must use Graduate School standards for English Proficiency. Capstone certificates should be designed so that admission requirements ensure that ESL support is not needed.

X If the program is NOT completely online and admits international students, the program is responsible for honoring federal visa regulations related but not limited to: length of stay requirements for visa requests, online course restrictions for visa holders, and waiting for federal program approval (up to a year) if the program represents a new degree type or capstone certificate previously not offered at UW-Madison.

3. Requirements for Program/Course Enrollment:

X Non-pooled tuition program students can only be enrolled in one program at a time; enrollment in a second major, named option, certificate program, or courses beyond the prescribed program curriculum is not permitted. Non-compliance with this requirement will jeopardize the receipt of tuition for a non-pooled program. Regular audits will be conducted to ensure these requirements are met.

X To ensure full receipt of non-pooled program tuition and to counter challenges from students who want to be dually enrolled, the program must adhere to the following:

X The program must provide information to students about prohibitions on concurrent program enrollment and out-of-program course enrollment. Programs must note this in recruiting materials, in recommendations of admission, on the program website, program handbook, and program orientation.

X Please see Appendix E for links and Appendix F for language for a specific non-pooled program template for a recommendation of admission letter and a general template for a program handbook. The program faculty/staff must provide details on this and any other program policies in the program handbook in at least following areas: satisfactory progress (good standing) requirements, ways to return to good standing, and a program grievance process if one does not already exist.
X The program communicates to students each semester prior to course enrollment the expectation that students can enroll only in program courses and not in courses outside the approved, prescribed curriculum.

X For students who enroll in the non-pooled program and then decide they want to pursue traditional/101 programs that allow dual enrollment, the program must help the student transfer to a different program(s) that allow such activity.
September 18, 2017

To whom it may concern,

Please accept the support of the Department of Communication Arts for the development of a new online capstone certificate in Data Analytics for Organizational Effectiveness (name tentative). My understanding is that the Department of Communication Arts will have the opportunity to provide a course in the program and generate revenue from that course.

The certificate will meet the needs of practicing professionals looking for skills in introductory applied research, data analysis and data mining. The program’s target of online students will also provide our participating faculty with new students and additional connections to industry.

As an active participant, I understand that most administrative functions of the certificate will be managed by the Information School. Communication Arts participation in teaching for the certificate will be managed by L&S approved MOA such as the example attached. It is my understanding that the chair of Communication Arts will have the opportunity to review and approve each MOA. Within these guidelines, I am pleased to offer our department’s full support of this initiative.

Sincerely,

Michael A. Xenos
CAPs Professor and Department Chair
Department of Communication Arts
Affiliate Faculty, Department of Life Sciences Communication
Affiliate Faculty, School of Journalism and Mass Communication
Editor, *Journal of Information Technology and Politics*
University of Wisconsin-Madison
6110 Vilas Communication Hall
821 University Avenue
Madison, WI 53706
September 27, 2017

Kristin R. Eschenfelder  
Director and Vilas Distinguished Achievement Professor  
The Information School at the University of Wisconsin-Madison  
Email: eschenfelder@wisc.edu  
Phone: 608-263-2105, 608-263-2900

Dear Kristin,

I am writing on behalf of the Department of Statistics to support the proposed online capstone certificate on Analytics for Decision Making. Data Science is the study of the generalizable extraction of knowledge learnt from data. It requires statistical data analysis, computing skills and domain science knowledge. Statistics Department launched a professional master degree on data science three year ago and has merged as a leading master data science program in UW-Madison. Your proposed certificate program is a useful addition to the broader data science offerings of UW-Madison, and we anticipate mutual benefits from the cooperation between our two programs.

Sincerely,

Yazhen Wang  
Professor and Chair  
Department of Statistics  
University of Wisconsin-Madison  
Email: yzwang@stat.wisc.edu
October 31, 2017

Kristin Eschenfelder  
Vilas Distinguished Achievement Professor  
Director, School of Information  
4217 HC White Hall, 600 N. Park Street  
University of Wisconsin-Madison  
Madison, WI 53706

Dear Kristin,

Please accept the support of the Wisconsin School of Business (WSB) for the development of the new online capstone certificate in Analytics for Decision Making (ADM). My understanding is that WSB will have the opportunity to provide a course for the program and generate revenue from that course. Further, as outlined in the Instructor Memorandum of Agreement, I understand that WSB will retain the right to use for other purposes any online course materials developed by a WSB instructor for the ADM.

The certificate will meet the needs of practicing professionals looking to increase their applied data and analytic decision making skills. The program’s target of online students does not compete with existing audiences for Business courses. Further, teaching in the program will give participating WSB faculty and staff access to new students and experience teaching fully online courses.

As an active partner in the program, WSB will send a voting representative to the certificate program advisory committee (to be named) and will suggest members for the certificate advisory board. We understand that most administrative functions of the certificate will be managed by the Information School.

We look forward to moving ahead with you in this endeavor.

Sincerely,

Anne P. Massey  
Albert O. Nicholas Dean  
Wisconsin School of Business

Office of the Dean  
Wisconsin School of Business  4300 Grainger Hall  975 University Avenue  Madison, WI 53706  
www.wsb.wisc.edu