Program Change Request

Approval Path

1. 11/27/18 10:22 am
   James G Morris (jgmorris): Approved for O I M Dept. Approver
2. 11/27/18 10:27 am
   Sharon M Kahn (smkahn): Approved for BUS School Admin Reviewer
3. 11/27/18 10:29 am
   Sharon M Kahn (smkahn): Approved for BUS School Approver
4. 11/29/18 4:23 pm
   Michelle Young (meyoung): Rollback to BUS School Approver for APIR Admin
5. 11/30/18 8:35 am
   Sharon M Kahn (smkahn): Rollback to Initiator
6. 11/30/18 2:46 pm
   Sharon M Kahn (smkahn): Approved for O I M Dept. Approver
7. 11/30/18 2:47 pm
   Sharon M Kahn (smkahn): Approved for BUS School Admin Reviewer
8. 11/30/18 2:52 pm
   Sharon M Kahn (smkahn): Approved for BUS School Approver
9. 11/30/18 5:00 pm
   Nicole Wiessinger (wiessinger): Rollback to BUS School Approver for APIR Admin
10. 12/03/18 9:15 am
    Sharon M Kahn (smkahn): Rollback to Initiator
11. 12/07/18 2:21 pm
    Sharon M Kahn (smkahn): Approved for O I M Dept. Approver
12. 12/27/18 11:05 am
    Sharon M Kahn (smkahn): Approved for BUS School Admin Reviewer
13. 12/27/18 11:07 am
    Sharon M Kahn (smkahn): Approved for BUS School Approver
14. 01/02/19 11:38 am
    Nicole Wiessinger (wiessinger): Rollback to Initiator
15. 01/02/19 6:16 pm
    James G Morris (jgmorris): Approved for O I M Dept. Approver
16. 01/03/19 2:01 pm
    Sharon M Kahn (smkahn): Rollback to Initiator
17. 01/03/19 4:56 pm
    James G Morris (jgmorris): Approved for O I M Dept. Approver
18. 01/04/19 7:29 am
    Sharon M Kahn (smkahn): Approved for BUS School Admin Reviewer
19. 01/04/19 7:30 am
    Sharon M Kahn (smkahn): Approved for BUS School Approver
New Program Proposal

Date Submitted: 01/03/19 4:48 pm

Viewing: Business Analytics
Parent Plan: MAJ: Bus: Oper & Tech Mgmt MSB

Last edit: 01/03/19 4:48 pm
Changes proposed by: kjbranch

Name of the school or college academic planner who you consulted with on this proposal.

<table>
<thead>
<tr>
<th>Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sharon Kahn - BUS</td>
</tr>
</tbody>
</table>

Proposal Abstract/Summary:

Data availability continues to rise, and companies recognize that it must be used as a competitive resource — resulting in dramatic increases in the number of career opportunities in business analytics.

The MS-Business: Operations and Technology Management, Named Option: Business Analytics will prepare students to seize these opportunities in a business-school environment, focused on delivering value to organizations. We would like to start educating students in this degree starting in the fall of 2019 as this is a competitive space with many schools already offering masters in business analytics and prospective student demand quite high. The team feels it is essential to launch an offering in fall 2019.

Students will learn how to harness the power of analytical tools to uncover insights and provide actionable recommendations in any business setting.

In this program, students will:

- Build a strong methodological foundation:
  - Programming tools including R and Python
  - Data management, including SQL
  - Data visualization (Tableau)
  - Machine learning
  - Prescriptive modeling

- Learn how to use these tools to generate insights from data in various specialty classes including:
Work in teams on consulting projects with real corporate partners and learn how to manage a project from identification to implementation.

The program is 30 credits, offered in-person, and is a full-time, with two semesters of coursework.

**Basic Information**

Type of Program:
Named Option

Parent Program:
MAJ: Bus: Oper & Tech Mgmt MSB

Parent Audience:
Graduate or professional

Parent Home Department:
O I M

Parent School/College:
School of Business

The program will be governed by the home department/academic unit as specified. Will an additional coordinating or oversight committee be established for the program?

No

Parent is in the Graduate School:
Yes

SIS Code:

SIS Description:

Transcript Title:
Business Analytics

Named Options:
Sub Plan 1032: No Title Found

Does the parent program offer this as an additional major as well?
No

Roles by Responsibility: List one person for each role in the drop down list. Use the green + to create additional boxes.

<table>
<thead>
<tr>
<th>Role Type</th>
<th>Name (Last, First)</th>
<th>Email</th>
<th>Phone</th>
</tr>
</thead>
<tbody>
<tr>
<td>Department Chair</td>
<td>Morris, James G</td>
<td><a href="mailto:jgmorris@wisc.edu">jgmorris@wisc.edu</a></td>
<td>608/262-1284</td>
</tr>
<tr>
<td>Primary Contact</td>
<td>Branch, Kristin</td>
<td><a href="mailto:kjbranch@wisc.edu">kjbranch@wisc.edu</a></td>
<td>608/262-9116</td>
</tr>
<tr>
<td>Primary Dean's Office Contact</td>
<td>Kahn, Sharon M</td>
<td><a href="mailto:smkahn@wisc.edu">smkahn@wisc.edu</a></td>
<td>608/265-3579</td>
</tr>
<tr>
<td>Faculty Director</td>
<td>Bauer, Daniel</td>
<td><a href="mailto:dbauer5@wisc.edu">dbauer5@wisc.edu</a></td>
<td></td>
</tr>
<tr>
<td>Faculty Director</td>
<td>Tong, Jordan</td>
<td><a href="mailto:jtong9@wisc.edu">jtong9@wisc.edu</a></td>
<td>608/265-8220</td>
</tr>
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</table>

List the departments that have a vested interest in this proposal.

<table>
<thead>
<tr>
<th>Departments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Computer Sciences (COMP SCI)</td>
</tr>
<tr>
<td>Statistics (STATISTICS)</td>
</tr>
<tr>
<td>Information School (I SCHOOL)</td>
</tr>
<tr>
<td>Engineering Professional Devlp (EGR P D)</td>
</tr>
<tr>
<td>College of Letters &amp; Science (L&amp;S)</td>
</tr>
</tbody>
</table>

Are all program reviews in the home academic unit up to date?
Yes

Are all assessment plans in the home academic unit up to date?
Yes

Are all assessment reports in the home academic unit up to date?
Yes

Mode of Delivery:
Face-to-Face (majority face-to-face courses)

Will this program be part of a consortial or collaborative arrangement with another college or university?
No

Will instruction take place at a location geographically separate from UW-Madison?
No

Parent has outside accreditation:
Yes
Parent Guide Accreditation tab
Graduates of parent program seek licensure or certification after graduation.
No
First term of student enrollment:
Fall 2019 (1202)
When will the application for the first term of enrollment open?
Spring 2019 (1194)
Which terms will you allow new students to enroll? What are the application deadlines for each term selected?

<table>
<thead>
<tr>
<th>Start Term</th>
<th>Application Deadline MM/DD</th>
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<tbody>
<tr>
<td>Fall</td>
<td>06/01</td>
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<tr>
<td>Summer</td>
<td>05/01</td>
</tr>
</tbody>
</table>

Year of three year check-in to GFEC (3 years after first student enrollment):
2023
Year of first program review (5 years after first student enrollment):
2025
If this proposal is approved, describe the implementation plan and timeline.

The leadership team, Daniel Bauer, Kristin Branch and Jordan Tong will be responsible for teaching and administration of the program initially. Implementation planning will be extensive throughout spring semester 2019 with the goal of having the formalized approved plans by May before the summer break. However, additional work to prepare student services like orientation, mentoring and advising will continue over the summer months. All working towards welcoming students in fall semester 2019.

In parallel with this proposal, we are proposing a new MS-Business Analytics degree program. Once this new program is approved and running, we intend to return the MS-Business: Operations and Technology Management, Named Option: Business Analytics to quiescent status. We are optimistic that this will happen such that we enroll our first class in the new MS-Business Analytics in summer 2020 or 2021 and, therefore, we think it is likely this MS-Business: Operations and Technology Management, Named Option: Business Analytics named option will not require a 3 year review.
We see it as imperative that we have a Business Analytics offering available for students in Fall 2019. By reviving the MS-Business: Operations and Technology Management with a named option in Business Analytics, we hope to achieve this goal.

**Rationale and Justifications**

How does the named option relate to the major and to other named options in the major, if relevant?

Business analytics encompass a wide number of domains. However, Operations and Technology Management do as well. Much of the data that is driving the industry and academic explosion of business analytics is coming from technology and our focus will be business management and implementation of the analytical work.

There are no other named options for this major and there will not be admissions into this major other than this Named Option.

Why is the program being proposed? What is its purpose?

On 10/3/2018, the University of Wisconsin—Madison announced its intention to expand its computing efforts with a new synergistic project across Computer Sciences, Statistics, and the iSchool to “bring computing and key related disciplines closer together to encourage collaboration and expand teaching and research activities.” “It is crucial that UW stay at the forefront of research and education in computing, information and data science,” said Chancellor Blank. With this MS-Business: Operations and Technology Management, Named Option: Business Analytics, the School of Business can complement, contribute to, and leverage this broader UW-Madison initiative. For instance, we envision students from these other programs will take advantage of the business applications classes in various industries offered under the umbrella of the MS-Business: Operations and Technology Management, Named Option: Business Analytics. And vice-versa our own students will have the possibility of deepening and broadening their modeling and computational skills by accessing classes in these programs.

The MS-Business: Operations and Technology Management, Named Option: Business Analytics provides an expedient 5th year on campus to extend their degrees earned for many of our undergraduate students. Students studying business may want to expand their knowledge in business analytics and tap corresponding career opportunities. Students majoring in statistics, economics, computer science, and many other quantitative non-business fields may find this MS-Business: Operations and Technology Management, Named Option: Business Analytics a way to link their undergraduate studies to business in order to expand their career possibilities. Additionally, students from other institutions across the state of Wisconsin, the US, and even the globe will be drawn to UW-Madison’s business application focused MS-Business: Operations and Technology Management, Named Option: Business Analytics.
The MS-Business: Operations and Technology Management, Named Option: Business Analytics is directly aligned with the School of Business Strategic Initiative goal of new and expanded MS programs.

The University of Wisconsin Madison states its goal of building innovative professional master-level degrees and other lifelong learning experiences in its Strategic Plan. We foresee extending the Wisconsin Idea as our curriculum emphasizes applied learning and includes live consulting projects with businesses in Wisconsin and beyond.

Within the School of Business, support for the MS-Business: Operations and Technology Management, Named Option: Business Analytics program has been expressed by the Department of Operations and Information Management, the Department of Marketing, the Department of Risk and Insurance, the School of Business Academic Leadership Council, the full faculty, and WSB Dean Barry Gerhardt.

Do current students need or want the program? Provide evidence.

The School of Business recently conducted a survey taken by 2448 current UW-Madison students to review and indicate interest in the various MS offerings in development consideration. The Business Analytics masters option was the top-ranked interest of the Master programs offered with 73% of students expressing some level of interest. When asked about their interest level in enrolling in a MS program immediately after undergraduate studies (our main target) 40 students in their senior stated extremely or very interested with 81 students in total expressing some level of interest in pursuing a UW-Madison School of Business master offering in Business Analytics immediately upon undergraduate graduation. The interest numbers increase with the junior, sophomore or freshman students. In the survey the most common majors expressing interest in this Business Analytics program include Business BBA students (Finance, Accounting, Marketing, Actuarial Science, Information Systems, and Management – in that order). "No Major BS" and "No Major BA" students are the other two top major groups.

What is the market, workforce, and industry need for this program? Provide evidence.

Many universities currently offer a Business Analytics masters program as noted in this article (https://poetsandquants.com/2016/01/18/business-analytics-masters-at-the-top-100-b-schools/), including some of our direct peers (e.g., University of Minnesota or Purdue). These programs have shown substantial growth over the past years. A Poet & Quants article (https://poetsandquants.com/2016/01/18/specialized-masters-programs-top-100-b-schools/2/) notes that, “Business analytics programs have also become a popular offering, as schools respond to industry’s need to exploit big data, and the subsequent demand for skilled data analysts. Twenty-seven business analytics programs are available among the top 100 schools, and that number is likely to rise quickly.”

The following is a list of career path options from currently open job postings:
A sample of job titles for graduates:
Starting median salaries for those with a Business Analytics masters is approximately $80,000/year. (https://www.usnews.com/education/best-graduate-schools/top-business-schools/articles/2017-02-06/consider-masters-programs-in-business-analytics).

What gap in the program array is it intended to fill?

Currently, the School of Business has analytical classes in the undergraduate and Full Time MBA programs as well as a Graduates Certificate in Analytics but this new MS-Business: Operations and Technology Management, Named Option: Business Analytics will be more a complete and robust analytics curriculum. We foresee this MS-Business: Operations and Technology Management, Named Option: Business Analytics enhancing all areas of our analytical offering as we anticipate enrollment that will support hiring of additional faculty or lecturers and if there is capacity in the classes, will be open to other MBA or MS students to enroll these classes.

The MS-Business: Operations and Technology Management, Named Option: Business Analytics curriculum areas overlap with other programs offered on campus, particularly the Master of Science in Statistics with a named option in Data Science (MS-DS), the Certificate in Data Analytics for Decision Making offered UW-Madison’s Information School, and related programs pushed forward under the school-wide initiative on computing. We view these similarities as synergistic rather than providing competition. In particular, we are serving a different student population: The MS-DS requires background in linear algebra, advanced calculus, probability, and programming, whereas we simply require one semester of calculus. Thus, the prototypical student will be less technically equipped, but possibly more veering towards managerial positions and liaison roles in analytics (and, indeed, our survey results indicated that the largest population of interested students are BBA graduates). And while most credits in the MS-DS are spent deepening students’ skills in statistical modeling, the MS-Business: Operations and Technology Management, Named Option: Business Analytics curriculum takes a balanced approach between descriptive, predictive, and prescriptive analytics with an emphasis on business applications. Hence, the MS-Business: Operations and Technology Management, Named Option: Business Analytics prepares students to tap the broad opportunities in business analytics and translating business questions to data scientists and their results back to the business manager rather than educating specialized data scientists.
Within the UW system, thus far there is no face-to-face Business Analytics degree in place. There are a few UW schools offering concentrations/emphases/certificates in Analytics within their MBA degrees (UW-Milwaukee, UW-Parkside, UW-Whitewater), but the level of depth as well as the prospective student populations are different. Also, there is a system-wide UW Master of Science in Data Science offered by six UW campuses and extensions, but delivery is online only and the focus is on methods rather than business applications.
https://datasciencedegree.wisconsin.edu/data-science-program/data-science-masters/

**Faculty and Staff Resources**

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

<table>
<thead>
<tr>
<th>Name (Last, First)</th>
<th>Department</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bauer, Daniel</td>
<td>Risk and Insurance (ACT SCI RM)</td>
<td>Associate Professor</td>
</tr>
<tr>
<td>Branch, Kristin</td>
<td>Marketing (MARKETING)</td>
<td>Faculty Associate</td>
</tr>
<tr>
<td>Tong, Jordan</td>
<td>Operations &amp; Information Mgmt (O I M)</td>
<td>Associate Professor</td>
</tr>
<tr>
<td>Siemsen, Enno</td>
<td>School of Business (BUSINESS)</td>
<td>Associate Dean</td>
</tr>
</tbody>
</table>

What resources are available to support faculty, staff, labs, equipment, etc.?

We will be able to use all current School of Business resources - classrooms, library, analytics lab, etc. to fully execute the MS-Business: Operations and Technology Management, Named Option: Business Analytics.

Program advisor(s) with title and departmental affiliation(s).

<table>
<thead>
<tr>
<th>Name (Last, First)</th>
<th>Department</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arora, Neeraj</td>
<td>Marketing (MARKETING)</td>
<td>Professor</td>
</tr>
<tr>
<td>Rosenberg, Marjorie A</td>
<td>Risk and Insurance (ACT SCI RM)</td>
<td>Professor</td>
</tr>
<tr>
<td>Liu, Qing</td>
<td>Marketing (MARKETING)</td>
<td>Associate Professor</td>
</tr>
<tr>
<td>Sydnor, Justin R</td>
<td>Risk and Insurance (ACT SCI RM)</td>
<td>Associate Professor</td>
</tr>
<tr>
<td>Morris, James G</td>
<td>Operations &amp; Information Mgmt (O I M)</td>
<td>Professor</td>
</tr>
</tbody>
</table>

Describe how student services and advising will be supported.

The faculty co-directors and the staff director will be the primary responsible members of MS-Business: Operations and Technology Management, Named Option: Business Analytics. This team will lead curriculum development and academic guidance - course planning. This team will also be responsible for the student professional development and partner on employer relations.
The Masters in Business Administration Program Office (MBA PO) will work closely to support the MS-Business: Operations and Technology Management, Named Option: Business Analytics students. The MBA PO team will lead admissions, recruitment, admissions operations, financial aid and merit aid processing, academic guidance - policies and procedures, student services - general, career and leadership development, employer relations, data reporting and rankings management.

Programmatic services, including connections to web and Guide information and the Registrar’s Office will be the responsibility of WSB Academic Affairs, in alignment with the work they currently perform related to existing WSB programs.

Communication with the WSB Dean’s Office will be the responsibility of the Director of Business Analytics or the Business Analytics Faculty Director(s).

Professional development opportunities will be primarily provided through Applied Learning events.

Confirm that the program advisor(s) or coordinator(s) have been consulted and reviewed this proposal.
Yes

**Resources, Budget, and Finance**

Is this a revenue program?
No

What is the tuition structure for this program?
Profession-specific tuition, Regent-approved

Does the program or change require substantial new resources other than those just described? Describe the needs. Confirm that the dean is committed to providing the resources.

This will be a 101 degree program. It will leverage existing infrastructure, at enrollments of 20 or fewer, however we believe this program will grow to 50-100 students quickly and that tuition revenue allocation will fund the additional resources.

Are new Library resources needed to support this program?
No

Describe plans for funding students including but not limited to funding sources and how funding decisions are made.

The majority of students will not receive financial assistance. However, some funds will be allocated to support candidates -- specifically to increase the likelihood of attracting candidates that increase diversity in the program and on campus. Additional funds will be available to
attract candidates away from competitor programs. All funds will be generated through program tuition dollars from other, previous students, or donor contributions.

**Curriculum and Requirements**

**Parent Plan Admissions/How To Get In Requirements**

Guide Admissions/How to Get In tab

Describe plans for recruiting students to this program.

We intend to publish a website to be a resource for all prospective students and current students.

We intend to have a full marketing plan including advertising, social media and events to recruit students from across the UW-Madison campus as well as nationally and internationally.

It should be noted that we intend to have a maximum capacity for year one of 20 students as that is the maximum enrollment that can be supported with existing resources. However, in future years we anticipate growing demand and the resources to accommodate.

**Projected Annual Enrollment:**

<table>
<thead>
<tr>
<th>Year</th>
<th>Projected Enrollment</th>
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<tbody>
<tr>
<td>Year 1</td>
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</tr>
<tr>
<td>Year 2</td>
<td>40</td>
</tr>
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<td>Year 3</td>
<td>50</td>
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<tr>
<td>Year 4</td>
<td>75</td>
</tr>
<tr>
<td>Year 5</td>
<td>100</td>
</tr>
</tbody>
</table>

Maximum enrollment that can be supported with existing instructional and student services resources:

20

Those who are not familiar with using the html editor fields may upload a document with information about the curriculum for use by those who will format and edit the content that will appear in the Guide.

**Parent Requirements**

Guide Requirements tab
Total credits required:

30

Parent Plan Graduate Policies

Guide Graduate Policies tab

Discuss expected progress to degree and time to degree. For undergraduate programs discuss considerations for supporting students to complete the degree in four academic years.

Students will graduate from the MS-Business: Operations and Technology Management, Named Option: Business Analytics in one academic year.

**Program Learning Outcomes and Assessment**

Parent Program Learning Outcomes
Apply business analytic tools and methods across various business functions (marketing, finance, supply chain, etc.) and industries (health care, finance, technology, etc.)
Leverage expertise in data management software (e.g., SQL) & statistical programming (e.g., R, Python) to go from data to decisions
Deliver insights and recommendations for organizations using cutting-edge descriptive, predictive, and prescriptive analytics techniques
Manage analytics projects, communicate professionally, and influence data-based changes within an organization

Summarize the assessment plan.

The first semester of the MS-Business: Operations and Technology Management, Named Option: Business Analytics teaches students methodological foundations of business analytics, including descriptive (data acquisition, data visualization, e.g.), predictive (statistical programming, machine learning, e.g.), and prescriptive (optimization, spreadsheet modeling, e.g.) analytic techniques. The second semester leverages this foundation in an array of elective classes focused on the application of business analytics across various business functions (marketing, finance, supply chain, etc.) and industries (health care, finance, technology, etc.) as well as in real world consulting experiences.

The assessment plan reflects this separation by assessing the methodological skills linked to learning objectives 2 and 3 at the end of the first semester in the context of core classes focused on predictive (GEN BUS 656 – Machine Learning for Business Analytics) and prescriptive (GEN BUS 730 Prescriptive Modeling & Optimization for Business Analytics) techniques. The skills with regards to business analytics applications and associated learning outcomes 1 and 4 are assessed in the Analytics Consulting Practicum (Gen Bus 770) and the Current Topics class that draws on the experiences in the diverse set of applications classes. Learning Outcomes 1
and 4 will be reported to the University in Year 1. Learning Outcome 2 in Year 2 and Learning Outcome 3 in Year 3.

**Commitments**

All required courses are approved through the school/college level.

Yes

Courses are offered on a regular basis to allow timely completion.

Yes

Courses have enrollment capacity.

Yes

Students may complete only 1 named option within a plan code.

Yes

The program faculty/staff will ensure the program website, Advance Your Career materials if applicable, and other presentations are consistent with the Guide information for this program.

Yes

Credential will not be awarded retroactively to students who completed all of the requirements before the credential was approved.

Yes

**Supporting Information**

List name and department of those who are in support of this proposal.

If those supporting the proposal provided a letter or email of support upload here. A letter is NOT required. Upload any other explanatory information about support from other UW-Madison units.

- iSchoolSupport_MSBDA.pdf
- EPD Letter of Support for MSBA (Business School).pdf
- BusinessAnalyticsMS_Dec2018 - Comp Sci.pdf
- MS-OTM named option Letter from Economics.pdf
- Business Analytics OverviewPPT.pdf

Additional Information:

**Approvals**
Department Approval - This proposal has been approved by the faculty at the department/academic unit level. The program faculty confirm that the unit has the capacity and resources (financial, physical, instructional, and administrative) to meet the responsibilities associated with offering the program, including offering the necessary courses, advising students, maintaining accurate information about the program in the Guide and elsewhere, conducting student learning assessment and program review, and otherwise attend to all responsibilities related to offering this program.

Enter any notes about approval here:

Entered by:
Date entered:

School/College Approval - This proposal has been approved at the school/college level and it is submitted with the Dean’s support. The Dean and program faculty confirm that the unit has the capacity and resources (financial, physical, instructional, and administrative) to meet the responsibilities associated with offering the program, including offering the necessary courses, advising students, maintaining accurate information about the program in the Guide and elsewhere, conducting student learning assessment and program review, and otherwise attend to all responsibilities related to offering this program.

Enter any notes about approval here:
Approved WSB Master's Curriculum Committee - 11.5.2018
Approved WSB APC - 11.15.2018
Approved WSB Faculty - 11.26.2018

Entered by and date:
Sharon Kahn
Date entered:
11.27.2018

GFEC Approval - This proposal has been approved by the Graduate Faculty Executive Committee and the Dean of the Graduate School.

Enter any notes about the approval here:

Entered by:
Date entered:

UAPC Approval - This proposal has been approved by the University Academic Planning Council and the Provost.

Enter any notes about approval here:

Entered by:
Date entered:
For Administrative Use

Reviewer Comments

Kristin Branch (kjbranch) (11/27/18 9:54 am): Letter of support was received from the Information School on 11/26/2018. Not sure how to add the letter since the work flow has started.


Sharon M Kahn (smkahn) (11/30/18 8:35 am): Rollback: Rolling back to allow for edits per JLM email

Nicole Wiessinger (wiessinger) (11/30/18 5:00 pm): Rollback: Rolling back for additional edits.

Sharon M Kahn (smkahn) (12/03/18 9:15 am): Rollback: Rollback for additional edits

Gurindar S Sohi (gssohi) (12/07/18 2:38 pm): See attached letter of support from me. Guri Sohi, CS Department chair.

Kyung-Sun Kim (kyungsunkim) (12/07/18 3:00 pm): No objection.

Elaine M Klein (emklein) (12/11/18 9:43 am): L&S received on Dec 7 a request for comment on the Named Option proposal with deadline Dec 12. I communicated with lead dean to note that we will be unable to provide comment in that time frame, as we need to (1) understand the perspectives of L&S units that were also invited to comment on the NOI to create a new degree program, (2) understand the distinctions and overlap between the proposed Named Option and the proposed new degree program, and (3) determine the potential impact on L&S programs. Though we are unable to accommodate the extremely short timeline in which our response was invited, we will likely be able to provide comment by December 21, which should be sufficient for consideration at the January GFEC meeting (if indeed that meeting is scheduled).

Kimberly A Grocholski (kgrocholski) (12/12/18 3:21 pm): The Department of Economics sent a memo to Ella Mae Matsumura.

Sharon M Kahn (smkahn) (12/19/18 3:11 pm): Attached letter from Econ

Elaine M Klein (emklein) (12/27/18 10:54 am): The College of Letters & Science was invited to comment on the proposal to create a named option in “Business Analytics,” to be offered under the MS-Operations and Tech Management program in the Wisconsin School of Business. Several L&S departments were also invited to comment and these units are not opposed to moving forward with this program. The Department of Economics in particular enumerates a limited amount of curricular overlap, since topics discussed in the program appear in a number of graduate-level courses in Economics. However, we note that the proposed program calls upon courses housed entirely within the WSOB and the Business and Economics Department offerings are distinguished from each other by the degree of required technical training. We also note that L&S monitors the extent to which students enrolled in non-pooled tuition programs pursue courses outside their own programs, and, while this program is proposed as a pooled revenue program, we nevertheless expect that if students enrolled in this program were to call upon L&S resources in a significant way, we would seek an agreement between the WSOB and Letters & Science to address that. With these considerations in mind, Dean Scholz supports the creation of the named option in “Business Analytics” under the MS-OTM.

Unfortunately, due to the timing of this request, the L&S APC has not been able to discuss this request, as is our usual practice. We will report this action at the next meeting, which is likely to
occur early in the Spring 2019 term. At that point, support can come from the College (as opposed to Dean Scholz). Submitted on behalf of Dean Scholz by Elaine M. Klein, Associate Dean for Academic Planning, L&S

Maureen A N Bischof (mabischof) (12/27/18 11:12 am): Parent program learning outcomes and assessment plan are up-to-date.

Nicole Wiessinger (wiessinger) (01/02/19 11:38 am): Rollback: Rolling back for revisions discussed in email with Sharon Kahn 1/2/19.

Sharon M Kahn (smkahn) (01/03/19 2:01 pm): Rollback: additional edits needed

Key: 1032
December 3, 2018

Ella Mae Matsumura  
Senior Associate Dean of Academic Programs  
*Robert and Monica Beyer Professor of Accounting*

As Chair of the Computer Sciences (CS) Department, I write to express enthusiastic support for the proposed Master of Science: Business Analytics degree. The intention of this degree, as you explained in our meeting, is to provide managers with both the management training as well as exposure to basic technological skills so that they are better able to manage and make decisions in an environment where technology is increasingly pervasive. It is great to see UW-Madison work towards creating such a degree.

Since there are currently no CS courses involved, there is no additional demand placed on the CS department at this time. That said, the CS department is planning to develop courses, especially as part of a proposed data science major, that may be of relevance as core (technology-related) courses in the proposed Business Analytics degree.

While at this time the CS department does not have the staffing for more closer interactions with the Wisconsin School of Business for this, or other curricula that require technological training, I expect that will change in the future. At that time, closer interactions may not only be warranted but also prudent, especially given the rapid change in technology and its impact on organizational structures and operations. I ask that the Wisconsin School of Business periodically evaluate the Business Analytics degree and assess potential pedagogical interactions with the computing entities on campus.

Sincerely,

Gurindar S. Sohi  
Department Chair
Vilas Research Professor
November 27, 2018

Ella Mae Matsumura  
Senior Associate Dean of Academic Programs  
Robert and Monica Beyer Professor in Accounting  
Wisconsin School of Business  
4345 Grainger Hall  
975 University Avenue  
Madison, WI 53706

Dear Professor Matsumura,

The Information School (iSchool) is pleased to support the Notice of Intent (NOI) for the new Master of Science in Business Analytics, currently under development by the Wisconsin School of Business (WSB). We believe that the new MS program will give WSB graduate students structured means to gain analytics expertise, and help them develop a credential to make them more competitive in job seeking. There is high demand for applied analytics professionals, and it is important that the UW-Madison campus offers multiple pathways for students to gain expertise in this area.

Sincerely,

Kyung-Sun Kim  
Interim Director and Professor
Dear Professor Matsumura,

I received your email on December 7, 2018, requesting a response regarding the proposal to create a new MS-Operations and Tech Management, named option Business Analytics (MS-OTM, named option Business Analytics) in the Wisconsin School of Business. Given the short timeframe provided for our department to send a response, the faculty in the Department of Economics conducted a high level review of the proposal. The focus of the review was to generally assess for curricular overlap between the Masters of Science in Economics – Graduate Foundations (MS-GF) and the proposed MS-OTM, named option Business Analytics. There is some curricular overlap between the programs, however we recognize that the MS-OTM, named option Business Analytics curriculum is less technical than the Economics MS-GF curriculum.

The Economics MS-GF offers three courses that cover some of the same content that is part of the proposed MS-OTM, named option Business Analytics. The Economics courses are

(a) Data Analytics for Economists
(b) Economics of Machine Learning
(c) Economics of Big Data.

The Economics of Machine Learning was taught fall 2018 semester. The Economics of Machine Learning content is close to the “Machine Learning for Business Analytics” and “Experiments and Causal Methods for Business Insight” courses that are part of the proposed MS-OTM, named option Business Analytics. One example used in the Economics of Machine Learning course is predicting sales/predicting the effect of promotions on a product's demand. Second, causal inference is a prominent topic in econometrics courses (which is a big focus of our MS-GF program) and we touch on the problem of causal inference and how machines learning tools can serve for causal inferences, possibly leveraging data generated by experiments.

The faculty consensus is that the overlap between the program coursework will be mitigated by the difference in technical training. We note that the first learning outcome is “Apply business analytic tools and methods across various business functions (marketing, finance, supply chain, etc.) and industries (health care, finance, technology, etc.)”. In addition, the proposal explicitly states that the training will be at a very low tech level - more appropriate to training managers of data analytic industry divisions. These aspects of the training minimize the overlap with our data analytic programs. On behalf of the faculty in the Department of Economics, I offer our support for the proposed MS-OTM, named option Business Analytics degree program.

Sincerely,

Ananth Seshadri
Chairman, Department of Economics
Todd E. and Elizabeth H. Warnock Distinguished Chair
December 11, 2018

Dear Ella Mae,

On behalf of the Statistics Department, I am writing to indicate no objections to the new Master of Science in Business Analytics currently under development by the Wisconsin School of Business.

The Statistics Department launched in 2015 a Data Science Option in our Master of Science - Statistics program, which has emerged as a leading Data Science graduate program on campus. While there is some overlap in the curriculum between your new Business Analytics program and our Data Science program (e.g. programming tools including R and Python, machine learning), your new program appears to be geared toward students interested in business requiring less math background, whereas our program provides a more comprehensive and rigorous training in Data Science requiring statistical data analysis, computing skills, and domain science knowledge.

We believe that your new program will serve graduate students in Business very well. In addition, we view your new program as a useful addition to the broader Data Science initiatives at UW-Madison and anticipate mutual benefits from coordination and collaboration between our programs.

The comments above also apply to your proposed named option Business Analytics within the Master of Science - Operational and Tech Management program.

We wish you the very best in developing the Business Analytics named option and the new Master of Science in Business Analytics program.

Yours sincerely,

Jun Zhu
Professor and Chair of Statistics
University of Wisconsin - Madison
Memo To: Ella Mae Matsumura, Senior Associate Dean for Academic Programs

Regarding: Notice of Intent: New Master of Science in Business Analytics

Dear Ella Mae,

I have received your November 18, 2018 letter requesting EPD’s support as part of the process for the Wisconsin School of Business’ pursuit of a new Master of Science in Business Analytics. As you probably know EPD’s master’s degree programs, including our Master of Engineering: Engineering Data Analytics (MEDA), are all delivered online. The target audience for these graduate degrees is practicing professionals that intend to continue their employment while pursuing their advanced degree. I understand the proposed MSBA will be an on-campus residential program targeting students graduating with a BS as an option for a fifth-year masters. As such, these two programs are not competitive as they are focused on different disciplines and audiences. If you feel there are ways we could collaborate into the future to leverage resources or to achieve mutual strengthening of our respective programs, please do not hesitate to reach out to us.

On behalf of the Department of Engineering Professional Development, we support the development of this new Business Analytics MS program. I appreciate you reaching out with the advance notice of intent to develop this new MS program.

Regards,

Douglas T. Reindl

cc. Susan Ottmann – Director, EPD Online Degree Programs
    Jake Blanchard – Executive Associate Dean, COE
December 3, 2018

Ella Mae Matsumura  
Senior Associate Dean of Academic Programs  
Robert and Monica Beyer Professor of Accounting

As Chair of the Computer Sciences (CS) Department, I write to express enthusiastic support for the proposed Master of Science: Business Analytics degree. The intention of this degree, as you explained in our meeting, is to provide managers with both the management training as well as exposure to basic technological skills so that they are better able to manage and make decisions in an environment where technology is increasingly pervasive. It is great to see UW-Madison work towards creating such a degree.

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Sincerely,

Gurindar S. Sohi  
Department Chair
Vilas Research Professor
Wisconsin School of Business

Business Analytics Masters Initiative

12/2018
Recent surge in MS degree offerings & demand

• Role of professional master degrees increasingly important in Business School portfolio (similar trends in other disciplines)

• Business Analytics is among the fastest growing & most in demand
  • 52 Business Analytics master programs in US (Source: GMAC 2018 report)
    • 64% of programs report increase in applications (Source: GMAC 2018 report)
  • Example: In their second year, Emory University’s business analytics master received more than 750 applications for a single cohort (tuition around 70K, Source: personal communication)

• UW-Madison will be the only system school in Wisconsin offering an in-person business analytics master degree
Competitive Analysis & Unique Positioning

• The team analyzed offerings by other universities to develop UW degree by emphasizing our strength
  • Comparison Group: Minnesota, UT-Austin, Purdue, Indiana, Iowa, Michigan State, & Rutgers

Our business analytics plan has 3 main differentiators:
  1. Well balanced across Descriptive, Predictive, and Prescriptive Analytic Approaches
  2. Masters in <1 year
  3. The breadth and depth in business application options
    • Students will take 3 classes/9 credits and choose from existing classes:
      • Health Analytics, Marketing Analytics, Supply Chain Analytics, Operations Analytics, People Analytics, etc.
Strategic Positioning Highlights

- Taking a balanced approach towards descriptive/predictive/prescriptive analytic methods
Strategic Positioning Highlights

- More programming/software than MBA, but on par with peer programs
Strategic Positioning Highlights

• Relatively high proportion of business analytics applications courses to specific functions/industry
Need to launch in 2019

- Time is of the essence
  - Wisconsin is already late in launching this initiative
  - Campus is asking Business to launch new MS degrees
  - Strategic alignment with broader UW push in data science

- New Named Option within Operations & Information Management department
  - OIM degree is a good fit for Business Analytics (STEM)
  - Creating a new Named Option

- Capping enrollment at 20 students for 2019-2020
  - Small cohort allows for establishing curriculum and possible tweaks
  - Essential for marketing & recruitment of steady state enrollment (target 50-100 students)
Discussed across campus

• The Business Analytics team has met with and discussed our plans with several UW departments
  • Engineering
    • Executive Professional Development – email discussion. Letter of Support received
    • Industrial & Systems Engineering – In-person meeting 11/28/18
  • College of Letters & Science
    • Statistics – In-person meeting 11/12/18. Letter of Support received
    • Information School – In-person meeting 11/16/18. Letter of Support received
    • Economics – email discussion. Letter of Support received
    • Computer Science – In-person meeting 11/21/18. Letter of Support received
    • Overall College – On-going email discussion. Statement expected 12/21/18
Business Analytics Learning Outcomes

• Apply business analytic tools and methods across various business functions (marketing, finance, supply chain, etc.) and industries (health care, finance, technology, etc.)

• Leverage expertise in data management software (e.g., SQL) & statistical programming (e.g., R, Python) to go from data to decisions

• Deliver insights and recommendations for organizations using cutting-edge descriptive, predictive, and prescriptive analytics techniques

• Manage analytics projects, communicate professionally, and influence data-based changes within an organization
# Business Analytics Named Option Degree Plan

## Fall Semester (15 required credits):
- GEN BUS 705 – Statistics & Programming for BA*
- GEN BUS 656 – Machine Learning for BA**
- GEN BUS 720 – Data Visualization for BA*
- GEN BUS 730 – Prescriptive Modeling & Optimization for BA*
- OTM 752 – Project Management
- GEN BUS 760 – Data Technology for BA*

## Spring Semester (15 required credits):
- Elective in Business Applications – Marketing Analytics
- Elective in Business Applications – Supply Chain Analytics
- Elective in Business Applications – Health Analytics
- GEN BUS 770 – Analytics Consulting Practicum*
- GEN BUS 840 – Current Topics in Business Analytics*

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*: New course, approved by Wisconsin School of Business  
**: New course, approval process complete
Please let us know if you have questions or want to discuss the Business Analytics initiative

Leadership Team:
Dani Bauer, R&I
Kristin Branch, Marketing
Jordan Tong, OIM