20 April 2015

TO: Sarah Mangelsdorf, Provost and Vice Chancellor for Academic Affairs
    Wendy Crone, Dean of the Graduate School

FROM: Kathryn VandenBosch, Dean, College of Agricultural and Life Sciences

RE: Agricultural and Applied Economics Resource and Energy Demand Analysis Capstone

At its regularly scheduled meeting on April 17, 2015, the College’s Academic Planning Council approved the Department of Agricultural and Applied Economics request to create a new capstone certificate program in Resource and Energy Demand Analysis (REDA). We understand this motion requires action by the Graduate Faculty Executive Committee and ask that it be placed on their agenda at the earliest possible time. Supporting documents are attached. Please feel free to contact me if you have any questions.

cc: Ian Coxhead
    William Provencher
    Barbara Forest
    Daniel Kleinman
    Marty Gustafson
    Kelly Haslam
    Jocelyn Milner
    Katherine Duren
    Richard Straub
    Sarah Pfatteicher
    Angela Seitler
Capstone Certificate in Resource and Energy Demand Analysis  
Responses to CALS APC questions from the March 27 meeting, 4/9/15

1. **Are the same admissions criteria applied to the CC and to the REDA MA?**

   No. Applicants to the REDA MA must satisfy all the admissions requirements stipulated by the Graduate School. These include submission of all transcripts, GRE and TOEFL scores, a statement of purpose, three letters of recommendation and a GPA minimum of 3.0.

   Capstone certificates are overseen by the Division of Continuing Studies (DCS). Applicants apply through DCS and are admitted as special students. Programs are allowed to set the terms of admission for their particular certificate and this varies widely, according to Dean Katy Duren.

   In the case of CC REDA, we will require a Bachelor’s degree from an accredited college or university. Applicants must submit a curriculum vita, at least one letter of recommendation, and transcripts if their degree date is within 5 years. GREs will not be required. Preference will be given to working professionals in the field of resource and energy management. Satisfactory progress will be measured by course grades, with no grade lower than a BC being accepted for certificate completion. *This is stated in Section 10, page 8 of the proposal.*

2. **Can a student who has completed the CC move directly into the MA? How will the transition be managed? Will there be additional application fees?**

   Yes. With average grades of B or better in the CC courses, we would consider for admission to the MA. The applicant would have to apply to the Graduate School, submitting the materials listed above. There is no application fee for students applying through DCS for capstones. Graduate applicants are charged a $56 fee. *This is stated in Section 8, page 3 of the proposal.* We expect that the audiences are so completely different that this occasion will be very rare.

3. **If CC credits are earned under special student status, is there any restriction on the number of credits that can be applied to the MA program?**

   We would accept only the 10 CC credits toward the MA. *This is stated in Section 8, page 3 of the proposal.*

4. **Will credits be priced the same in CC and MA?**

   Yes. We will continue to honor the resident/non-resident tuition rates currently in effect, rather than adopting the new tiered tuition scale recently proposed by DCS. We believe that most of the students will be non-residents, but we think it’s a good idea to give Wisconsin residents the tuition subsidy afforded to other classes of students. *This is shown in the Budget, page 11.*
Dear Colleagues:

We are very pleased to present for review by the CALS APC our proposal for a new Capstone Certificate in Resource and Energy Demand Analysis (CC-REDA). This is a revenue-generating program under the Educational Innovation model.

The 10-credit certificate is comprised of three courses, approved in 2014, that will be taught in an online format to serve the needs of professionals working in the energy and resources industry. It will piggyback on the REDA M.A. named option that will launch in late summer 2015.

Since announcing REDA, we have fielded numerous inquiries from industry professionals who want to gain the quantitative skills this certificate offers. But they are not free to quit their jobs, relocate to Madison and take a year off to earn a master’s degree. We anticipated this demand when we conducted the market research for REDA last year and are pleased to have early evidence that our instincts were well founded.

We are already working with the distance learning specialists in the Division of Continuing Studies to develop the three courses for online teaching. They will also be taught in the classroom for the REDA M.A. students. The first of the online courses, Brian Gould’s AAE 770, will be offered in late July 2015, to the inaugural REDA M.A. class.

The certificate will be financially self-sustaining and will bring additional resources into AAE and CALS. It will also extend our reputation as a leader in an important and growing field with tremendous workforce potential.
Our faculty have voted to use revenues from CC-REDA to support our core undergraduate and graduate programs. CALS will also derive a financial benefit, allowing it to seed new EI programs in the future.

Thank you for reviewing the proposal. We look forward to answering your questions.

Sincerely,

Ian Coxhead
Professor and Chair
1. **Summary/Overview**

This ten-credit, online Capstone Certificate will serve the growing number of early-career professionals working in demand-side resource and energy management and analysis who are seeking opportunities to develop or augment their quantitative skills. These individuals are employed by electric and gas utilities, water utilities, energy service companies (ESCOs), government agencies, and consulting firms. Due to economic and technological circumstances, industry demand for resource and energy demand analysis will become far more intensive and extensive over the coming years.

The certificate will be offered alongside the new AAE M.A. named option in Resource and Energy Demand Analysis (REDA) that was approved at the campus level in October 2014. It will use three of the quantitative skills courses that are part of the REDA M.A. named option (two of which are taught face-to-face), offering these courses in an online format so that working professionals can complete the certificate without having to take a sabbatical from their jobs. Since announcing REDA, we have had significant interest from the industry for such a distance learning option. An earlier market analysis performed by Division of Continuing Studies (DCS) also found enthusiasm from firms for training that would accommodate their employees.

We don’t anticipate overlap in demand for the REDA M.A. named option, which is a 30-credit degree program, and this capstone certificate, but we would allow capstone students to take the REDA named option, if they wished to continue their education. The market for the certificate is working professionals, whereas the named option targets students who have recently completed an undergraduate degree in environmental studies, economics, engineering, etc.

Importantly, the incremental cost of offering the certificate is relatively low because it is designed to “piggy-back” an expected 8-10 students per year on the material and infrastructure of the REDA M.A.. Costs are shown in the budget (Appendix 1) and include increments for faculty teaching of 3 courses, and modest amounts for administration, computer support and marketing. We estimate that the costs of offering the certificate are covered by an enrollment of five students.

2. **Name, Participating Faculty**

Capstone Certificate in Resource and Energy Demand Analysis (CC-REDA), sponsored and administered by the Department of Agricultural and Applied Economics. The Program Director is Prof. Bill Provencher. Participating faculty include Profs. Brian Gould, Dan Phaneuf and Bill Provencher. Other AAE faculty will participate in the future.

3. **Implementation Timeline**

We would like to begin the certificate in Summer 2016. The courses have already been approved and are in the university catalog. We are in the process of developing them for online teaching, offered as a separate section of the existing courses.

4. **Letters of Support**

We are attaching the letters of support previously solicited for REDA. At the time we requested support letters, the Capstone Certificate was included in the REDA proposal, so the original letters signify support for this proposal, as well. We also include an updated letter of support from the Dean of Letters and Science.

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1 Throughout this document, REDA refers to the new M.A. Named Option. CC-REDA refers to the proposed capstone certificate.
This and letters from Economics, the Wisconsin Energy Institute, the Nelson Institute, the La Follette School of Public Affairs, and the Statistics Department are found in Appendix 2.

5. Governance

CC-REDA will be governed by the Agricultural and Applied Economics (AAE) faculty and Executive Committee. The REDA M.A. Program Advisory Committee that includes AAE faculty, other UW faculty engaged in energy research, and industry experts based in Madison will also provide guidance to the certificate. This committee will assure that learning objectives match the skill set needed in the targeted employment sectors.

The Program Director (for REDA and CC-REDA) will be assisted by a Program Coordinator (instructional academic staff, with some teaching responsibilities), with additional help from department administrative and IT staff. Teaching assistants will provide instructional support in the three courses. The relevant department standing committees, such as Admissions and Curriculum, will oversee those facets of the program.

6. Purpose and Rationale

This program is designed to extend the econometric training of current professionals involved in the development, implementation, and evaluation of energy efficiency technologies and programs offered by private technology firms and gas and electric utilities. These professionals include utility program administrators, energy service company (ESCO) staff, government staff, and program support contractors (consulting firms).

Our judgment of the opportunity for such a program is based on:

- The large number of related workshops offered at professional conferences.
- Discussions with industry professionals, and comments received by AAE since the marketing of REDA began. Within two months of publicly announcing REDA in fall 2014, and despite limited initial marketing of REDA, we have been contacted by six employers. These individuals have offered various ways to support the program, and they want to employ our graduates. When told about the certificate, they are uniformly enthusiastic. Of the numerous information requests we have gotten from prospective students, several have asked about a distance learning option.
- A marketing survey of industry leaders conducted by DCS indicating that CC-REDA would generate strong interest among current professionals.
- The expectation that once the quality of REDA graduates is established, employers will want to send their current employees to CC_REDA for training. This expectation is reinforced by the often low quality of analyses presented at professional conferences, indicating that many current practicing professionals lack the basic analytical skills necessary for high quality work.

7. Curriculum

The certificate curriculum will consist of two of the existing REDA courses that have already been approved at the campus level for the M.A. named option, as well as one of our existing econometrics courses that is also part of the REDA curriculum (AAE 636). Teaching Assistants will be assigned to all three courses to help with expanded enrollments and offering the course in two formats (in person for REDA, remote for CC-REDA). The courses are shown in Table 1. They will be taught in an online format at the same time as the face-to-face classes are being taught to the master's students. No exceptions or substitutions will be allowed. Capstone students will be enrolled as University Special Students.
<table>
<thead>
<tr>
<th>Course name and number</th>
<th>Pre-reqs</th>
<th>Description</th>
<th>Cr</th>
<th>Instructor</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Summer JDD session</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>AAE 770 Introduction to Quantitative Methods in Resource and Energy Economics</td>
<td>Enrollment in REDA or Special Student status &amp; consent of instructor</td>
<td>The fundamental mathematics and statistics necessary for the study of quantitative methods in resource and energy demand. Topics include the mathematics of optimization and its role in basic welfare theory and consumer demand; linear and matrix algebra and their application in both modeling consumer behavior and the statistical analysis of models; and the fundamentals of statistical analysis relevant to econometric analysis of resource and energy demand, including probability theory, sampling distributions, and statistical inference.</td>
<td>3</td>
<td>Gould</td>
</tr>
<tr>
<td><strong>Fall</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>AAE 636 Applied Econometric Analysis 1</td>
<td></td>
<td>First Master’s-level course in econometrics, including introductory topics in program evaluation.</td>
<td>3</td>
<td>Phaneuf</td>
</tr>
<tr>
<td><strong>Spring</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>AAE 772 Applied Econometrics of Resource and Energy Demand</td>
<td>AAE 636, enrollment in REDA or Special Student status &amp; consent of instructor</td>
<td>The estimation of the economic models of resource and energy demand, including evaluation of energy and resource programs, estimating demand systems in the study of dynamic pricing models, estimating discrete choice models, Forecasting resource and energy demand from econometric models, and topics in the application of big-data analytics in resource and energy demand analysis.</td>
<td>4</td>
<td>Provencher</td>
</tr>
</tbody>
</table>

8. Overlap Limits

Capstone certificate students will be limited to working professionals looking for distance learning options to expand their skill set, rather than current degree-seeking UW-Madison students. Therefore, there will be no overlap issues. In the rare case that a certificate student wants to continue in the REDA named option degree program, we will allow them to do so, as long as they have an average of B or better in the three capstone courses (the average expected for REDA named option students), and subject to the university rules governing transfer of credits taken as a University Special Student.

9. Assessment and Program Review

The certificate is intended to train early- and mid-career professionals working in resource and energy demand analysis. Consequently the courses provide students with the graduate-level training in economics and quantitative methods, with emphasis on statistical methods that will help them be more effective in the workplace. Assessment of the certificate involves two lines of examination:

- Is the program meeting its learning goals? That is, is it successfully teaching students the intended material?
- Is the program meeting its program goals? Is it teaching high-quality students the right material for the intended professional market in a sustainable way?

Figure 2 presents a schematic of the assessment inputs and the overall assessment process. Details are discussed below.
Assessment of learning goals. Learning goals are presented in Figure 1. The courses expected to achieve the goals are presented in Table 2. These have been developed in collaboration with the team of DCS staff who are assisting us with online course development, which will be completed for AAE 770 this summer and which will be ongoing over the next year for AAE 636 and 773. We will present a curricular update once the online course development is completed. Data contributing to an evaluation of whether students are achieving learning goals include the following:

- **Pre- and post-testing.** This will take place in the first course AAE 770, a math/stats review, to measure skill attainment at the start of the certificate.
- **Course grades.** A general benchmark of successful attainment of learning goals is a GPA of 3.3 or higher by at least 90% of program students. CC-REDA students will be evaluated in their cohort’s special online section of the classes.
- **Student course evaluations.** Course evaluations will be designed to elicit whether the student believes the course is meeting its intended learning goals.
- **Student program evaluation survey.** A detailed, structured program evaluation survey to be completed by all students at the end of the certificate. The survey will address whether the student believes the program accomplishes its intended learning goals, seek recommendations about how to change the curriculum if it isn’t, and inquire about additional learning goals the student believes should be included in the program.
- **CC-REDA alumni survey.** Alumni will be surveyed one year out to determine what learning goals should be strengthened and added to improve the program. Since they will already be in the workplace, this information will also help to strengthen goals for the M.A., as well.

Annual review of learning goals. At the end of each program year, a comprehensive review will be undertaken to assess learning goals, as illustrated by the blue-shaded area in Figure 4. The first of two primary steps in the review process will be carried out by the Program Director, Program Coordinator, and the faculty involved in teaching the capstone courses, who, aided by data from the pre- and post-testing in 770 and course evaluations, will meet to discuss the following:

- Which learning goals are students having the greatest difficulty mastering, and what steps can be taken to address shortcomings?
- Based on the annual review of program goals (see below), are there learning goals that should be dropped? Are there goals that should be added?

The outcome of the meeting will be a written report produced by the Program Director and Program Coordinator, “Instructor-based CC-REDA certificate learning assessment report,” enumerating:

- Those learning goals that are being met;
- The goals that are not being met, and the changes in the curriculum necessary to address the deficiency; and
- The goals that should be added, subtracted or altered – and how the changes will be incorporated in the program curriculum – to better position certificate learners for professional advancement.

The second review step involves a review of the program from the perspective of students and alumni. Data for the review will include the course evaluations, the student program evaluation survey, and the alumni survey. The Program Director and Program Coordinator will synthesize this material in a written report, “Student-based CC-REDA learning assessment report”.

As shown in Figure 2, the two assessment reports will be presented to the Program Advisory Committee (PAC), which will be asked to provide feedback and recommendations, with particular emphasis on insights provided by industry members about the needs of industry, nascent industry challenges that might require new or altered learning goals, and so forth. The PAC will then draft an Annual Memorandum of Recommendations that includes recommended curricular changes to better achieve desired learning goals.
The AAE Graduate Committee will review the PAC recommendations and the learning assessment reports and move all or selected and additional recommendations to the full faculty for approval.

**Assessment of program goals.** The overarching goal of the certificate is to provide working professionals with the training and skills necessary to provide greater value to their employers and thus advance their careers. The program must be sustainable and able to respond to changing market opportunities.

Specific program goals are the following:

- **Program enrollment of 5-8 students annually.**
- **Positive net revenues in the first year.** Program costs are low (conditional on existence of REDA), and so we expect positive net revenues immediately. Please see the budget in Appendix 1 for details.
- **High student satisfaction.** At least 80% of students expressing high satisfaction in the student program evaluation survey (As indicated in Figure 4, this survey will be used to assess both learning goals and program goals).
- **High satisfaction of alumni.** At least 80% of students expressing high satisfaction with the program 1 year after leaving the program (as determined from the program alumni survey).
- **Adaptability.** Sensitivity and fast adaptation to changing market needs.

**Annual review of program goals.** At the end of each program year, a comprehensive review will be undertaken to assess program goals, as illustrated by the red-shaded area in Figure 2. The Program Director, The Program Coordinator, and the Department Outreach Specialist will assemble all information relevant to program goals in an annual report, “CC-REDA program assessment report”. The program report will be presented to the Program Advisory Committee, which will be asked to provide feedback, additional insights, and recommendations about how to alter the program structure to increase the opportunity for success. The PAC will then draft an Annual Memorandum of Recommendations that includes recommended changes to the capstone certificate courses. The AAE Graduate Committee will review the PAC recommendations and the program assessment report and move all or selected and additional recommendations to the full faculty for approval.

**Fifth year capstone certificate review.** The data collected in the annual assessments will be compiled for the required program reviews every five years (or whatever review schedule is mandated by the Graduate School), to be carried out in collaboration with the Division of Continuing Studies, the Graduate School and CALS.
Figure 1. CC-REDA Learning Goals and Program Objectives

**Learning Goals**

- **Economic Quantitative Analysis**
  - Assess Resource and Energy Demand Use and Consumption
  - Statistical Modeling and Methods

**Program Objectives**

<table>
<thead>
<tr>
<th>Frame Analysis</th>
<th>Execute Analysis</th>
<th>Critique &amp; Provide Feedback</th>
<th>Communicate Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Question &amp; problem solve</td>
<td>• Conduct and analyze studies</td>
<td>• Assess evidence</td>
<td>• Synthesize results</td>
</tr>
<tr>
<td>• Model behaviors</td>
<td>• Measure variability</td>
<td>• Draw Conclusions</td>
<td>• Summarize effectively to variety of audiences</td>
</tr>
</tbody>
</table>

**Technical Knowledge**
- • R
- • Stata
- • PowerPoint presentation systems

**Intuitive Knowledge**
- • Measureable data
- • Problem solve appropriate methodology
- • Contextual understanding of data set
- • Formulate appropriate questions
- • Think logically and systematically
- • Relationship between external variables

**Applied Knowledge**
- • Skills and understanding of industry needs and problems
- • Use programming skills effectively
- • Execute technical thinking to solve behavioral problems
- • Use industry knowledge to solve problems
Table 2. Capstone Certificate Learning Goals

<table>
<thead>
<tr>
<th>Learning goal</th>
<th>Courses designed to achieve the goal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mastery of the foundations of economic quantitative analysis</td>
<td>AAE 770</td>
</tr>
<tr>
<td>Mastery of statistical modeling and methods applicable to resource and energy</td>
<td>AAE 636, AAE 772</td>
</tr>
<tr>
<td>Working knowledge of resource and energy demand use and consumption</td>
<td>AAE 636, AAE 772</td>
</tr>
</tbody>
</table>

Figure 2. Annual Review of Learning and Program Goals
10. Admissions Requirements

Certificate students will be required to hold a Bachelor's degree from an accredited college or university. Applicants must submit a curriculum vita, at least one letter of recommendation, and transcripts if their degree date is within 5 years. GREs will not be required. Preference will be given to working professionals in the field of resource and energy management. Satisfactory progress will be measured by course grades, with no grade lower than a BC being accepted for certificate completion.

Because the certificate is available online, we will be able to accept international applicants who can take the courses from their home countries and therefore not need to obtain a visa or meet full-time requirements. If an international applicant is already studying in the U.S., we will follow the SEVIS requirements for those individuals.

11. Marketing and Enrollment

A marketing analysis was conducted by the Division of Continuing Studies (DCS) in spring 2014. Potential employers were interviewed about their opinions about the need for both a master's degree and a capstone certificate. They were enthusiastic about both, but felt that the certificate would be a better option for their current employees.

Within two months of beginning to advertise REDA in late fall 2014, AAE has been contacted by six employers. These individuals have offered various ways to support the program, and they want to employ our graduates. When told about the certificate, they are equally enthusiastic. Of the numerous information requests we have gotten from prospective students, several have asked about a distance learning option.

Marketing can also be targeted to participants in professional conferences and through the industry itself as we expand our contacts. We project first-year enrollment at about 5-8. The capacity is virtually unlimited, since the courses don't require classroom space or other institutional physical facilities, but we expect a steady-state enrollment of 8-10.

12. Student Progress to Completion

We anticipate and will strongly encourage a lock-step progression through the three certificate courses, because we feel this will best serve the students pedagogically. Progress will be monitored by the REDA Program Coordinator.

13. Advising and Exceptions/Substitutions

Advising regarding course selection is expected to be minimal given the straightforward nature of the curriculum. Course instructors and the Program Coordinator will be available to prospective, current, and former students for other advising questions as they arise. Substitutions are not available or allowed.

14. Financial Aid and Graduate Assistantships

No financial aid will be available from the department. We anticipate that most capstone students will be getting full or partial tuition support from their employers, because this certificate will make them much more valuable employees.

15. Fiscal Structures

This certificate will operate alongside the Master's named option in Resource and Energy Demand Analysis. At the time we sought approval for the REDA named option, we also had this certificate included in the proposal but decided to wait a year to get the new courses developed. In early 2014, we received approval to offer REDA as a program revenue structure under the Educational Innovation model. Indeed, the capstone certificate will significantly improve program revenues for the entire REDA training endeavor. A budget is
attached in Appendix 1. For clarity, we have combined the CC REDA and REDA M.A. budgets, since some CC costs represent increments of the larger REDA project. CC costs are highlighted. Also note that this combined budget includes the new assessment imposed by campus on all EI programs.

16. Ongoing Commitment

Because this certificate represents a subset of REDA courses we see no issues regarding availability of course offerings. We will work with DCS on promotion, and AAE staff have already received training in the new DCS Lead Management system that launches in late February in conjunction with the new Advance Your Career web portal for adult learners. We already have the REDA Master's website up, and it is linked to the DCS portal. We will follow all governance rules.
## Combined Budget: REDA MA and Capstone

**NOTE:** Revenues/Costs for Capstone are highlighted in Yellow

### DEVELOPMENT COSTS (Nov 2014-Aug 2015)

<table>
<thead>
<tr>
<th>Description</th>
<th>Salary/Expenses</th>
<th>Fringe Rate</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Course/content design CC (1 summer month)</td>
<td>$17,400</td>
<td>$5,220</td>
<td>$22,620</td>
</tr>
<tr>
<td>Course/content design MA (4 summer months)</td>
<td>$53,574</td>
<td>$16,072</td>
<td>$69,646</td>
</tr>
<tr>
<td>Constructing computer infrastructure computer expert time (.5 months)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MA</td>
<td>$5,417</td>
<td>$1,625</td>
<td>$7,042</td>
</tr>
<tr>
<td>equipment and software MA</td>
<td>$5,000</td>
<td>NA</td>
<td>$5,000</td>
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<tr>
<td>Administrative support MA</td>
<td>$20,000</td>
<td>$6,000</td>
<td>$26,000</td>
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<tr>
<td>Administrative support CC</td>
<td>$5,000</td>
<td>$1,500</td>
<td>$6,500</td>
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<tr>
<td>Initial marketing and recruitment MA</td>
<td>$50,000</td>
<td>NA</td>
<td>$50,000</td>
</tr>
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**total development costs net of marketing:** \( \$136,808 \)

**total development costs:** \( \$186,808 \)

### ANNUAL OPERATING COSTS (beginning July 2015)

<table>
<thead>
<tr>
<th>Description</th>
<th>Salary/Expenses</th>
<th>Fringe Rate</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Program director (flat salary addition)</td>
<td>$13,723</td>
<td>$4,117</td>
<td>$17,840</td>
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<tr>
<td>Program coordinator</td>
<td>$75,000</td>
<td>$22,500</td>
<td>$97,500</td>
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<td>Faculty teaching salary MA</td>
<td>$72,798</td>
<td>$21,839</td>
<td>$94,637</td>
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<tr>
<td>Faculty teaching salary CC (3 @ 07.5% for online courses)</td>
<td>$29,335</td>
<td>$8,801</td>
<td>$38,136</td>
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<tr>
<td>Admin support MA (.25 time)</td>
<td>$7,500</td>
<td>$3,555</td>
<td>$11,055</td>
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<td>Admin support CC (.20 time)</td>
<td>$6,000</td>
<td>$2,844</td>
<td>$8,844</td>
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<tr>
<td>Teaching Assistants (3.5 9-month slots)</td>
<td>$52,500</td>
<td>$0</td>
<td>$52,500</td>
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<tr>
<td>Computer/database support MA (.20 time)</td>
<td>$13,000</td>
<td>$3,900</td>
<td>$16,900</td>
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<td>Computer/database support CC (.10 time)</td>
<td>$6,500</td>
<td>$1,950</td>
<td>$8,450</td>
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<tr>
<td>Ongoing marketing, recruitment and operations, MA</td>
<td>$25,000</td>
<td>NA</td>
<td>$25,000</td>
</tr>
<tr>
<td>Ongoing marketing, recruitment and operations, CC</td>
<td>$5,000</td>
<td>NA</td>
<td>$5,000</td>
</tr>
</tbody>
</table>
Total annual operating costs: $375,862
CALS EI Administrative Fee (10% of operating) $37,586
Total costs: $413,448

ANNUAL OPERATING REVENUES

<table>
<thead>
<tr>
<th></th>
<th># of students</th>
<th>Revenue per student</th>
<th>Total revenue</th>
</tr>
</thead>
<tbody>
<tr>
<td>MA tuition from in-state enrollment</td>
<td>10</td>
<td>$14,080</td>
<td>$140,800</td>
</tr>
<tr>
<td>MA tuition from out-of-state enrollment</td>
<td>10</td>
<td>$29,904</td>
<td>$299,040</td>
</tr>
<tr>
<td>CC tuition from in-state enrollment</td>
<td>4</td>
<td>$7,478</td>
<td>$29,912</td>
</tr>
<tr>
<td>CC tuition from out-of-state enrollment</td>
<td>4</td>
<td>$15,807</td>
<td>$63,228</td>
</tr>
</tbody>
</table>

Total annual operating revenue: $532,980
10% Tax on revenue $53,298

ANNUAL NET REVENUE (after July 2016) $66,234
ANNUAL NET REVENUE RETAINED BY AAE (2/3 of net revenue after July 2016) $44,112

*Resident tuition for MA: $5929/AY semester; $2230/summer = $14,088
Non-resident tuition for MA: $12,592/AY semester; $4729/summer = $29,913
(Tuition figures are taken from current rates on Registrar's website)

Appendix 2. Letters of Support

We attach the letters of support that also accompanied the REDA M.A. named option proposal, along with an updated letter from Letters and Science.
19 March 2015

TO: Ian Coxhead, Professor and Chair, Agricultural and Applied Economics
FROM: John Karl Scholz, Dean
RE: Proposed AAE Capstone Certificate, “Resource and Energy Demand Analysis”
CC: Elaine Klein, Assistant Dean for Academic Planning, L&S
Jocelyn Milner, Associate Provost and Director, Academic Planning and Analysis
Laura Van Toll, Academic Planner, CALS

You recently contacted me to verify that, just as L&S supported your department’s creation of the MA-Agricultural and Applied Economics named option in Resource and Energy Demand Analysis, we would also support the planned capstone certificate. I sought the advice of the L&S units that had offered early support and leaned that their support continues. When I discussed the program with the L&S Academic Planning Council, they too advised support. We were pleased to hear that the response to the named option has been encouraging, and can imagine that the response to this program will be as well.

On March 17, 2015, the L&S APC approved unanimously a recommendation to support this proposal. We wish you all success with it.
March 31, 2014

Professor Ian Coxhead
Department of Agricultural and Applied Economics
429 Taylor Hall
427 Lorch Street
Madison, WI 53706

Dear Professor Coxhead,

The Economics Department enthusiastically supports the Department of Agricultural and Applied Economics’ proposal to create a Named Option for the M.S.in Agricultural and Applied Economics: Resource and Energy Demand Analysis (REDA).

Our economics courses are currently set up in a way that space has been available for Agricultural and Applied Economics (AAE) students to help them obtain their degree. We offer pertinent electives and other relevant courses for them to choose for their course of study. We do not see this availability changing in the future or with the addition of the new REDA option in their M.S. program. However, if our course availability changes in any way in the future, we will communicate the changes with AAE and discuss other options so as not to hinder the proposed REDA option in their M.S. program.

Again, the Economics Department fully supports the endeavor of the AAE department to implement a Named Option for the M.S.in Agricultural and Applied Economics: Resource and Energy Demand Analysis.

If we can be of further assistance in the approval process for the proposed REDA option, please do not hesitate to contact me.

Sincerely,

Ananth Seshadri
Economics Department Professor & Chair
19 March 2014

To: R. William Provencher, Professor, Agricultural and Applied Economics

From: Michael Corradini, Director, Wisconsin Energy Institute; and Paul H. Zedler, Associate Director for Research and Education, Nelson Institute

Re: Support for the proposed AAE Master's program in resource and energy demand analysis

We, the Directors of the Nelson Institute for Environmental Studies and the Wisconsin Energy Institute, are pleased to indicate our support of the proposed Master’s program in resource and energy demand analysis to be offered through the Department of Agricultural and Applied Economics.

We offer this support because we believe that as proposed it will complement, rather than compete with, existing energy-related offerings and programs at UW-Madison. As you know, we have had discussions about the need for a campus-wide Master’s degree program in energy. We therefore hope that this program will be step towards realizing that objective.

Michael Corradini
Paul H. Zedler
March 31, 2014

Dear Professor R. William Provencher,

I am writing on behalf of the La Follette School of Public Affairs to support the proposed UW-Madison Agriculture and Applied Economics (AAE) Master's program in resource and energy demand analysis.

We believe this program will be a complement to the Master’s training programs currently being offered at the La Follette School. We hope that AAE’s new program will add new classes and offerings at UW-Madison, which will extend our campus’s leadership in this important area.

My best,

{signed electronically}

Susan Webb Yackee
Director and Associate Professor
La Follette School of Public Affairs
UW-Madison
Date: 19 March 2014
To: Ian Coxhead, Chair, Department of Agricultural and Applied Economics
From: Brian S. Yandell, Chair, Department of Statistics
Re: Master's in Resource and Energy Demand Analysis

Thank you for sharing this proposal for a named option of “Resource and Energy Demand Analysis (REDA)” in the MS in Agricultural and Applied Economics. This looks like an exciting opportunity to address a growing need. We in the Department of Statistics see no conflict with this offering. We are open to collaboration on aspects of this of mutual interest as your ideas, courses and program develop. For instance, the proposed “Math/Stats Review” (AAE 6XX) has potential for synergy with our own rethinking of gateway statistics courses.
Memorandum of Understanding Between the College of Agricultural and Life Sciences and the Department of Agricultural and Applied Economics related to the establishment of an academic program funded through 131 funding.

Please note that this MOU is contingent upon appropriate review and approval of the proposed academic programs and courses through normal governance procedures.

Description of Academic Program: See attached request for a new Capstone Certificate in Resource and Energy Demand Analysis, to serve as a companion program to the named Option in Resource and Energy Demand Analysis ("REDA") within the Agricultural and Applied Economics Master of Arts degree.

Approval by the CALS APC, GFEC, and UAPC are pending for the Certificate and have been received for the Option.

- Option Implementation: September 2015.
- Administrative, Academic, and Advising responsibilities will be overseen by: Department of Agricultural and Applied Economics
- Department/Program Contact: Prof. Bill Provencher, program director
- College of Record: CALS

Budget: The original budget to support both programs, as it appears in the academic program proposal, is attached. The Department has sought development and initial marketing funds from the Division of Continuing Studies. Beyond these start-up funds, the Program is expected to be fully self-funded.

- Annual operating costs for the two programs are estimated at $400,000 per year.
- CALS will assess an EI Administrative Fee equal to 10% of the annual operating costs, or an estimated $40,000 per year.
- Program revenue must first be directed toward paying the expenses of the program, including both the operating costs and the EI Administrative Fee, as well as any accumulated debt in these areas, as well as the campus EI surcharge of 10% of tuition revenues.
- Any net revenue remaining after operating costs, administrative fees/surcharges, and past debt have been paid is to be split between the Department and the College, with the Department authorized to retain 2/3, and the remaining 1/3 to go to the College.

A full account of the Program’s budget (income and expenditures) will be included in the Department’s annual report to the Dean.

Annual Operational Review: Each year for 5 years, the Department will provide as part of its annual meeting with the Deans, a review of the Programs’ academic and fiscal progress. The review will consider such issues as:

- Is the estimate of operating costs sufficient to cover actual costs of running the programs? If not, are adjustments needed?
- With respect to enrollment levels, program quality, and similar matters, are the programs meeting intended academic goals/outcomes? If not, why not?
- Is the revenue generated sufficient to support the programs? If not, are adjustments needed?
- Is the revenue generated meeting other department goals or benefits are outlined in the proposals? If not, are adjustments needed?
• Is the programs’ impact on the department’s other curricular activities acceptable given overall department goals? If not, what changes are required?
• Is the program’s impact on the department’s personnel needs in line with goals for this program? If not, what changes are required?

If questions or concerns arise during this annual review that require additional attention, the Department shall meet with the Associate Dean for Academic Affairs and other members of the CALS Administrative Team as appropriate to review the programs and their financial status in further detail and report back to the Dean on any recommended actions or revisions.

**Academic Program Review:**
Consistent with CALS and UW policy, the Department is responsible for ensuring reviews of new Master’s and Capstone Certificate programs occur five years after initiation of such programs. Instructions for preparing self-studies and the required governance steps are posted on the APIR website (apir.wisc.edu). Information from Annual Review discussions may, if desired, contribute to the five-year and subsequent reviews.

**Financial Stability of the Program:** In the event that revenue in a given year is not sufficient to cover expenses, the Programs will be allowed to carry over a negative balance not to exceed the projected one-year operating expenses. The College expects the Programs to generate sufficient funds to cover all operating expenses within the first three years of operation of the Programs. If it becomes clear that the Programs’ financial situation is untenable, the College and the Department will modify the funding base or, if modification is not possible, close one or both Programs and implement a “teach-out” plan consistent with UAPC policy on program closure/discontinuation. The College will bear one-third of the overall financial losses of the Programs; the Department sponsoring the programs will need to pay back to the College the remaining two-thirds.

**Use of Program Revenue:** Revenue retained by the Department must be used in accordance with all applicable policies regarding the use of 131 funds and any permanent hires made on these funds must be approved in advance by the College. Revenue provided to the College will first be used to ensure adequate college-level administrative support for revenue-generating programs (such as in Academic Affairs, Business Services, Human Resources, and so forth), to provide funds to seed future Educational Innovation projects, and to cover financial losses of Educational Innovation and revenue-generating programs.

Kathryn VandenBosch 4/13/15
CALS Dean & Director

Ian Coxhead 4/9/15
Department Chair

Bill Provencher 4/13/15
REDA Program Director

Angie Seiter 4/13/15
Asst Dean for Business Services
APPENDIX A. CORE CRITERIA CHECKLIST
FOR ACADEMIC PROGRAMS WITH NON-POOLED TUITION

1. New and Additional Student Enrollments to Support Program Costs
   - The program must bring in NEW and ADDITIONAL students. Overall enrollment in all other
goal 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.
   - 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.
   - 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
   - Has an applied, practice-oriented curriculum, or integrates practice with theory
   - Is offered in a modality that allows non-traditional audiences to attend (evening, weekend,
online, intensive, or some combination)
   - Has demonstrated a workforce demand for the program graduates
   - Has defined learning goals that are oriented to market considerations
   - Has a clearly defined curriculum that is "self-contained", meaning that program students are
confined only to courses from the approved, prescribed curriculum
   - 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
   - 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.
   - 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:
   ✓ School/college budget officer has approved the budget and fiscal plan.
   ✓ 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.
   ✓ 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.
   ✓ 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.
   ✓ 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:
     - The program faculty/staff must disclose this program policy to students in the recommendation of admission letter, program website, program handbook, and program orientation. **We will put this in place.**
     - 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. **We will create these documents.**
2. Requirements for International Students:

☑ 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. **Not applicable.**

☑ 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.

☑ 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. **Not applicable.**

3. Requirements for Program/Course Enrollment:

☑ 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.

☑ 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:

- 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.

- 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.

☐ 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.

☐ 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.

*We will comply in the future after program is approved.*

Non-Pooled Tuition Program Requirements and Process, V.3.28.2015, Page 6 of 11
APPENDIX C. IMPLEMENTATION CHECKLIST
FOR ACADEMIC PROGRAMS WITH NON-POOLED TUITION

Review compliance with core criteria and additional criteria outlined for all non-pooled programs before proceeding with this implementation checklist. All three checklists should accompany the academic proposal when it is submitted to the Provost and Dean of the Graduate School and Provost for approval by GFEC and UAPC respectively. The checklist will be reviewed again at the implementation meeting.

1. Program description:
   - Program Name: Capstone Certificate in Resource and Energy Demand Analysis
   - Department/Academic Unit Home: Agricultural and Applied Economics
   - School/College: Agricultural and Life Sciences
   - Type of Program (Capstone, Master's degree, Master's degree option, Other): Capstone
   - Mode of Delivery - Face-to-Face or Online: Online
   - Format of Delivery – compressed, evening/weekend, part-time, other: Online
   - Start Dates
     a. Accept applications: August 2015
     b. Enroll students: August 2016
     c. Web content is live: Summer 2015
   - Program handbook is complete Spring 2016
   - Non-pooled program leadership:
     a. Program Faculty Director: R. William Provencher
     b. Program Coordinator: To be hired, PVL 82332 (interim coordinator: Barbara Forrest)
     c. Other key staff who will need to be included in communications: Ian Coxhead

2. Fiscal Basics
   - If the program is face-to-face, the program charges standard graduate tuition according to the UW-Madison tuition schedule.
   - If the program is on-line, the program has selected ONE of the available tuition tiers for per credit tuition. Selected per credit tuition rate: We will use the standard graduate tuition rates for residents and non-residents
   - The program tuition has NO non-standard features? If yes, explain:
   - The program faculty/staff and school/college budget officer have completed the “item type” form.
   - Planned enrollment generates 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:

Fiscal Annual Summary
Planned enrollment: 8-10
Est paid tuition: $93,140 (based on 4 residents and 4 non-residents, see Budget, Appendix 1)

Core Instructional costs: $46,586 (faculty teaching and computer support)
Direct student support costs: $8,844 (administrative costs)
Overhead assessment/allocation: $15,357 (CALS administrative fee and University “assessment” on revenue (10%))
Total costs: $75,787 (includes $5,000 for marketing)

Excess tuition available for reinvestment: $17,353
Briefly list planned reinvestment uses: Support for graduate students in our traditional program

3. Administrative Basics – This section will be completed by APIR and Graduate School Staff
   □ The program has been approved by the school/college governance process. Date: 04/17/2015
   □ The program has been approved by the Graduate Faculty Executive Committee. Date:
   □ The program has been approved by the University Academic Planning Council. Date:
   □ Program Code/Name Specifics
      □ Program Name:
      □ Plan Code:
      □ Subplan Code (if applicable):
      □ Effective date for first enrollment:
      □ Nontraditional?
      □ Online/Distance?
      □ Educational Innovation?
   □ Program has provided content for the Graduate Catalog including details for their “Satisfactory Progress and Program Requirements” chart
   □ Program has provided content for the Graduate School website and the campus Career Portal
Implementation Form – Capstone Certificates

This form must accompany a capstone certificate proposal. An updated form should be submitted when changes to the certificate are made. It is used by administrative offices to better assist departments and programs with implementation. Questions in this form reflect guidelines in the Full Guidelines for For-Credit Certificates, http://apir.wisc.edu/certificates.htm.

Document Date: 04/21/2015
Name of Capstone Certificate: Resource and Energy Demand Analysis
Faculty Program Director: R. William Provencher
Primary Faculty/Staff Contact: Barbara Forrest
Home Department/Academic Unit (Name/UDDS): A07 2000
   Approval Date: 05/05/2014
School/College: Agricultural and Life Sciences
   Approval Date: 04/17/2015
GFEC Approval Date:
UAPC Approval Date:
Implementation Term (typically the fall term after UAPC approval): Summer 2016 (1166)
Year that first program review is scheduled (usually 5 years after implementation): 2021

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):

Curriculum(9-12cr) - List of required and elective courses and any other program requirements:

Projections for annual enrollment: 8-10

Specify overlap provisions – name degree/major, minor or certificate programs that a student may have previously earned that disqualify them from being admitted to the capstone certificate program.

M.A. Agricultural and Applied Economics, named option Resource and Energy Demand Analysis

Capstone Certificate Implementation Form – February 2015 - Page 1 of 2
<table>
<thead>
<tr>
<th>Question</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Confirm that the capstone certificate is open to only non-degree seeking University Special students who hold a bachelor’s degree.</td>
<td>x</td>
<td></td>
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<tr>
<td>Confirm that all credits are required to be earned in residence at UW-Madison.</td>
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<td>x</td>
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<tr>
<td>Will there be limits on number of students who can enroll?</td>
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<td>x</td>
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<tr>
<td>If Yes, please explain:</td>
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<tr>
<td>Confirm that all core/required courses are approved through the school/college curriculum committee.</td>
<td>x</td>
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<tr>
<td>Confirm that courses in curriculum are offered on a regular basis and have space for students in this program.</td>
<td>x</td>
<td></td>
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<tr>
<td>Confirm that required courses in the curriculum are numbered 300 or above.</td>
<td>x</td>
<td></td>
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<tr>
<td>Confirm that courses taken as Pass/Fail or Audit are not included in the curriculum.</td>
<td>x</td>
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<tr>
<td>Are courses taken Credit/No Credit allowed?</td>
<td></td>
<td>x</td>
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<tr>
<td>If yes, specify limits:</td>
<td></td>
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<tr>
<td>Confirm that special topics courses are only used if all instances count for the certificate.</td>
<td>n.a.</td>
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<tr>
<td>Confirm that, at a minimum, C grades must be earned on all course work attempted for the capstone certificate program. (Only graduate-level work from the capstone that is earned with a grade of B or better is eligible for subsequent application to a UW-Madison graduate degree program.)</td>
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<td>x</td>
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<tr>
<td>If other requirements, please specify:</td>
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<tr>
<td>Will exceptions to the course core requirements be allowed?</td>
<td></td>
<td>x</td>
</tr>
<tr>
<td>If yes, specify limits and process:</td>
<td></td>
<td></td>
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<tr>
<td>Confirm that the program/department has a process in place to monitor student progress and to notify the Registrar’s Office when students complete the certificate requirements.</td>
<td></td>
<td>x</td>
</tr>
<tr>
<td>Assessment plan – confirm that the proposal includes a plan that describes how the program faculty will regularly evaluate student learning.</td>
<td>x</td>
<td></td>
</tr>
<tr>
<td>Confirm that the program/department understands that international students who must request a UW-Madison-issued I-20 (for the F-1 student visa needed for legal study in the US) will only be eligible to participate in the program if it is offered full-time and if the program has been approved by the US government to receive such international students. If the program is offered entirely online or the international student is here legally on another visa (such as the JS, H, etc.) and an I-20 from UW-Madison is not needed, then this provision does not apply.</td>
<td>x</td>
<td></td>
</tr>
<tr>
<td>Will this capstone certificate be implemented as a Fund 131 tuition program?</td>
<td></td>
<td>x</td>
</tr>
<tr>
<td>If yes, has a budget been developed with the Division of Continuing Studies and the sponsoring school/college dean’s office?</td>
<td></td>
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<tr>
<td>Who is the appropriate school/college contact for questions? Sarah Pfatteicher, CALS Associate Dean</td>
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