DATE

NAME
Professor
Department of DEPT
University of Wisconsin-Madison
Sent Electronically

Dear Professor NAME,

Thank you for agreeing to serve as the Graduate Faculty Executive Committee (GFEC) representative for the Five-Year Program Review of the follow programs:

- PROGRAM/DEGREE in the SCHOOL/COLLEGE OF …
- PROGRAM/DEGREE in the SCHOOL/COLLEGE OF …

Program reviews are focused and meaningful endeavors that help improve the quality of programs and the university by examining strengths and challenges, celebrating accomplishments, and planning for the future.

The purpose of a five-year review is to determine whether the goals and objectives as stated in the original program proposal were met, and evaluate if the program is meeting standards of quality that are expected.

The review committee should focus on the quality of the student experience, the extent to which student learning outcomes are clearly articulated, and mechanisms used by the program to assess student learning during the review. Among the questions you will want to consider are:

- What are the mission and goals for the program, and does its structure, governance, and academic home best support them?
- Are admissions practices and enrollment levels consistent with plans, program resources and career outcomes?
- Are students regularly and consistently assessed across the program?
- Do students have clear and simple access to information concerning requirements and processes?
- Were all program students, staff, and faculty notified that the review process had commenced, and were they offered appropriate channels in which to provide feedback?
- Does the program foster diversity, a climate of respect and inclusion, and a sense of community?

I strongly encourage you to use these additional resources to explore program data while conducting the review:

- Guidelines for Conducting Five-Year Reviews of Academic Programs
- Academic Program Review Guidelines and Resources
- Guidelines for Certificates
- Graduate School Explorer: Enrollment, Admissions, Funding, and Degree Data

Office of the Dean
217 Bascom Hall 500 Lincoln Drive Madison, WI 53706-1380 grad.wisc.edu
Email: GraduateSchoolDean@grad.wisc.edu; Phone: (608) 263-1353; Fax: (608) 265-9505
It may be helpful to understand the process and various roles in the five-year review. Appendix 1 highlights the roles and responsibilities of various parties involved and summarizes the full program review guidelines. Should you have any questions about your role as a GFEC representative during the review or experience a delay you wish to discuss, please contact Associate Dean Parmesh Ramanathan (parmesh.ramanathan@wisc.edu).

In closing, I want to thank you again for your contribution to this important campus process that serves as a platform to explore ways to maintain and enhance academic quality at our university. We recognize program reviews require an investment of faculty and staff time, but believe they are useful endeavors to examine strengths and challenges, to celebrate accomplishments, and to reflect on, and plan for, the future.

Sincerely,

William J. Karpus
Dean of the Graduate School
Professor of Pathology and Laboratory Medicine

Cc. DEAN, COLLEGE OF
OTHER PERTINENT STAFF
Jocelyn Milner, Office of the Provost
Karen Mittelstadt, Office of the Provost
Parmesh Ramanathan, Graduate School
Jenna Alsteen, Graduate School
Appendix I. Suggestions and Advice for Five-Year Review Committee Chairs

Appendix 1 highlights the roles and responsibilities of the various parties involved in the graduate program review process, summarized from the full program review guidelines.

I. Review committee chair and the committee

Review committee chairs are active members of the University Academic Planning Council (UAPC), or very recent past members. If the person who chaired the original new program proposal committee is available, that person will be invited to participate as one of the other members. The director of APIR is always available for questions or to provide additional information.

II. Materials

The five-year review committee is convened through a formal charge memo from the provost to all members of the five-year review committee. When the review committee chair receives the charge memo with the packet of materials, he/she should review the packet to make sure it contains all of the documents with all of the pages and all of the pieces.

Typically the packet will consist of the self-study, a cover letter from the dean, and the summary of the original program proposal. The charge letter will specify what’s in the packet. Contact the director of APIR if anything is missing.

III. Preliminary planning and communication with the review committee

The chair decides on a general plan for the review. The chair may make a range of decisions about how to proceed. Typically the chair schedules two 2-hour meetings for the review committee. For some reviews, the chair may choose to include meetings with program faculty and staff, meetings with students, a tour the program facilities, and/or meetings with other program constituencies. Such activities are not always included and they can be added at the discretion of the committee.

The chair should start making arrangements for review committee meetings as soon as (s)he receives the charge memo. It may be necessary for the meetings to be scheduled several weeks into the future to accommodate everyone’s schedule. That gives lots of time for members to review the materials. Scheduling assistance may be available from the Office of the Provost; consult the director of APIR.

Once the meeting schedule is set the chair e-mails the committee members to confirm. At least two weeks before the first meeting, the chair should remind committee members to review the documents and remind them to send requests for any additional information well in advance of the meeting. This action sets the expectation that committee members should be prepared to make the meeting time productive.

IV. Agenda for the review committee meeting

The agenda for the review committee meeting can take many formats. It is always useful to start with introductions. Often members of the review committees don’t know each other. Because UW-Madison is such a large university, we can structure meaningful review committees without external reviewers.
An agenda format that seems to work well:

1. **Introductions**

2. **Overall discussion of the self-study.** The chair has already signaled in via email the expectation that everyone will have read the materials, so no lengthy description of the program is really necessary. Experience says discussion is better than inviting the program rep to give an overview of the program.

3. **Go through the self-study page by page and invite comments, discussion, and questions.** The program rep can probably answer many of the questions. Probably allow about 45 min for that. This discussion allows everyone to have their say and to get a good understanding of the program. This approach puts all of the issues, concerns, positives perspectives on the table without having to get to a resolution on each one. This format for discussion is a good basis for identifying program strengths, concerns, and some ideas for any (friendly and non-binding) advice the review committee wants to offer the program faculty for improvement of the program.

4. **Address the specific questions described in the charge memo.** Some of this will be a recap of the earlier discussion. Are the goals and objectives met? Is the program important to UW-Madison? Has the program achieved a reasonable level of quality, as appropriate to the field? Are there resource implications/issues that will keep the program from continuing at some level of effectiveness?

5. **Recap the program strengths and opportunities for improvement.** It is helpful to recap from the earlier discussion the main points.

6. **Next steps.** Outline next steps and time line. The committee may want to meet again. The committee may want to interview students or faculty, or tour facilities. Otherwise, next steps will depend on the decisions of the chair and the review committee.

**V. Preparing the review committee report**

The chair drafts the report based on notes taken at the review committee meeting. The review committee report is typically two or three pages long. An outline might be something like this:

- a summary of the activities of the review committee, meeting dates, and materials reviewed
- a summary/overview of the programs key features
- identification of strengths and challenges
- summary of any opportunities for improvement
- as requested in the charge, have the goals and objectives of the program, as originally stated in the program proposal, been met. If not, why?
- is the program an important contribution to the UW-Madison program offerings - does it serve students, faculty, the public good?
- has the program achieved a level of quality appropriate for a young UW-Madison program? Is it planning for the future? Is it on a positive trajectory?
- are there any resource implications that are problematic (outside those that are impacting all programs)
- summary of overall program review findings
On a timeline set by the chair and the committee, the chair should circulate a draft report for review by committee members and provide a deadline for responding. It may take a couple of iterations of review to satisfy all members of the review committee. If the report becomes more complicated to complete and consensus is difficult to achieve via email, then an additional review committee meeting may be required.

After all of the committee members are satisfied with the report, it should be submitted to the provost (copy to all the committee members), as requested in the charge to the committee. Usually, the work of the committee is completed when the report is submitted. If the committee placed conditions or restrictions on the program, then the committee may have an on-going evaluative role. Details will be determined on a case by case basis.

VI. Governance review

After the report is submitted to the provost, it will be sent from the provost’s office to the school/college dean for comment. (Because a program representative is on the review committee, the program already knows about the content of the report.)

After the dean acknowledges the report, the review is scheduled for governance review. For graduate programs the report is sent to the Graduate School and presented at a Graduate Faculty Executive Committee meeting by the GFEC member on the committee. GFEC takes a formal action to endorse the recommendation of the review committee.

The final campus review step is consideration by the UAPC. The chair of the review committee, a UAPC member, presents the review at the UAPC meeting and is present for the discussion. At this point the work of the committee chair is complete. The UAPC will vote to adopt the report and endorse the recommendation of the review committee.

The provost sends formal notice to the dean and the program faculty leader.
Dear Professor NAME,

Thank you for agreeing to serve as the Graduate Faculty Executive Committee (GFEC) representative for the Ten-Year Program Review of the following programs:

- PROGRAM/DEGREE in the SCHOOL/COLLEGE OF …
- PROGRAM/DEGREE in the SCHOOL/COLLEGE OF …

Program reviews are focused and meaningful endeavors that help improve the quality of programs and the university by examining strengths and challenges, celebrating accomplishments, and planning for the future.

The review committee should focus on the quality of the student experience, the extent to which student learning outcomes are clearly articulated, and mechanisms used by the program to assess student learning. Among the questions you will want to consider are:

- What are the mission and goals for the program, and does its structure, governance, and academic home best support them?
- Are admissions practices and enrollment levels consistent with plans, program resources, and career outcomes?
- Are students regularly and consistently assessed across the program, and does the frequency improve the mentoring experience?
- Are professional development efforts, including the use of Individual Development Plans (IDP), used to enhance mentoring and career development? Is a range of student career outcomes supported?
- Do students have clear and simple access to information concerning requirements and processes?
- Were all program students, staff, and faculty notified that the review process had commenced, and were they offered appropriate channels in which to provide feedback?
- Does the program foster diversity, a climate of respect and inclusion, and a sense of community?
- Does the program adequately focus on retention, resulting in timely progress to degree and high PhD completion?
- Is student funding adequate? For PhD programs, is there guaranteed full funding for the first four-five years?
I strongly encourage you to use these additional resources to explore program data while conducting the review:

- Academic Program Review Guidelines and Resources
- Graduate School Explorer: Enrollment, Admissions, Funding, and Degree Data
- Trends in Degrees and Doctoral Minors
- PhD Retention/Completion Rates and Time to Degree
- Graduate School Survey Data

It may also be helpful to understand the context of the GFEC member’s role in the overall review process. Appendix 1 highlights the roles and responsibilities of the various parties involved, summarized from the full program review guidelines. Your role and responsibilities as the GFEC representative and a program review committee member are in **bold**. Should you have any questions about your role as a GFEC representative during the review or experience a delay you wish to discuss, please contact Associate Dean Parmesh Ramanathan (parmesh.ramanathan@wisc.edu).

In closing, I want to thank you again for your contribution to this important campus process that serves as a platform to explore ways to maintain and enhance academic quality at our university. We recognize program reviews require an investment of faculty and staff time, but believe they are useful endeavors to examine strengths and challenges, to celebrate accomplishments, and to reflect on, and plan for, the future.

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Jenna Alsteen, Graduate School
Appendix 1. Highlights of Graduate Program Review Process

Appendix 1 highlights the roles and responsibilities of the various parties involved in the graduate program review process, summarized from the full program review guidelines. The roles and responsibilities of the GFEC representative as a program review committee member are in bold.

1. Program Self Study
   a. Initiated by School/College Dean, and conducted by the program.
   b. The self-study requires reflective discussion on the current state and future direction of the program.
   c. After the self-study is complete, it is submitted to the School/College Dean.

2. Review Committee Formed
   a. The School/College Dean assembles and charges a review committee with expectations for the review.
   b. Graduate program review committees must include a GFEC member. Note: The GFEC member cannot serve as committee chair.
   c. The chair is responsible for scheduling and convening meetings, overseeing the process, and submitting the final report to the Dean.

3. Review Committee Conducts Formal Review
   a. The review will be based on the self-study, relevant program data (including the Graduate School Statistical Program Profiles) and often includes a site visit to meet with program faculty, staff and students.
   b. The Committee prepares a final report of the program's strengths, challenges, and recommendations for improvement for submittal to the School/College Dean.

4. School/College Review
   a. Both the School/College Dean and the School/College Academic Planning Council of review the program review documents.
   b. The School/College Dean prepares a final summary of the review, and sends it to the Provost and Dean of the Graduate School.

5. Graduate Faculty Executive Committee (GFEC) Review
   a. The GFEC member on the review committee presents the review at a GFEC meeting for discussion.
   b. GFEC may request additional information or provide additional comments back to program.

6. APIR/Office of the Provost
   a. APIR will track program review activity and monitor program review status.
   b. Annual reports on program review are reviewed by the University Academic Planning Council (UAPC).
Three-Year Check-In for New Programs

The creation and maintenance of graduate programs and certificates represents significant resource commitments by faculty and staff. Given these investments, in 2014 the Graduate Faculty Executive Committee (GFEC) established a “check in” process for newly approved programs and certificates prior to their first formal university review (which occurs in the fifth year.) Through this “check-in,” the GFEC hopes program faculty and staff will assess the implementation of their new program and determine what mechanisms may be needed for sustained student success.

Progress reports will be included on GFEC agendas, and program representatives may be asked to attend GFEC if additional information is requested. In the interest of brevity, please keep responses to 300 words or less.

Program Name

Power Conversion and Control Capstone Certificate

Term of First Enrollments

Fall 2015

Check-In Completed By

Professor James M. Tinjum

Date Completed

11/07/19

Academic Quality and Student Success

1. Provide an update on any changes to the program’s curriculum and learning outcomes. Include a description of the program’s typical course modalities (face-to-face, online, asynchronous discussion, team or individual assignments) and if courses have evolved based on faculty or student feedback.

The PCC curriculum and learning goals remain the same as that proposed in the plan approved by UAPC on February 19, 2015, and via the Curriculum Map (Table 1):

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

• ECE 411: Introduction to Electric Drive Systems (3 credits)
• ECE 412: Power Electronics Circuits (3 credits)
• ME 446: Automatic Controls (3 credits)
Learning Goals:

1. Analyze how torque and speed are controlled in the major classes of electric machines.
2. Evaluate how power electronics is used to perform electrical power conversion from one form into another.
3. Complete preliminary designs of automatic controlled systems using power electronics circuits.

Table 1: Curriculum Map

<table>
<thead>
<tr>
<th>Curriculum Map (Where)</th>
<th>Enter certificate-level learning goals and mark which course contributes to which learning goal.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Capstone Certificate Program Courses</strong></td>
<td>Analyze how torque and speed are controlled in the major classes of electric machines.</td>
</tr>
<tr>
<td>ECE411 Introduction to Electric Drive Systems</td>
<td>X</td>
</tr>
<tr>
<td>ECE412 Power Electronics Circuits</td>
<td></td>
</tr>
<tr>
<td>ME446 Automatic Controls</td>
<td></td>
</tr>
</tbody>
</table>

The only change in the program is that more students are required to take the online version of ECE355 (Electromechanical Energy Conversion) as preparation for the full PCC program, particularly those students that may not have graduated from an ECE degree program. The course modalities continue to be online recorded lectures with online discussion sessions, both with faculty members as the course instructors-of-record and the assigned teaching assistants. Based on student and faculty feedback, the program is provided with a consistent minimum level of TA and grading support to support the learning environment.

2. Briefly explain the program’s learning outcomes assessment plan and discuss how you are or how you plan to evaluate student learning. Summarize any data collected to date showing evidence of student learning.

Assessment Planning is summarized in Table 2. Assessment information is reviewed annually with program faculty and staff at the annual Fall Faculty meeting. As each PCC course has examinations which are of similar structure and content to those administered to on-campus students, we have year-over-year data that shows the consistency and
measure of student achievement and evaluation for both online and on-campus delivery of these courses.

Because PCC students must have a minimum GPA of 3.33 to apply to the full online Power Engineering MS program, students that achieve the learning goals summarized in Table 1 tend to receive grades of B or higher and tend to continue into the full Power Engineering Online MS degree program. Approximately 60% of PCC students apply for the full MS program upon completion of the PCC Certificate.

Table 2: Assessment Planning

<table>
<thead>
<tr>
<th>Assessment Planning (How)</th>
<th>Analyze how torque and speed are controlled in the major classes of electric machines.</th>
<th>Evaluate how power electronics is used to perform electrical power conversion from one form into another.</th>
<th>Apply automatic control principles to regulate key performance variables in electric machines and power converters.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Method for assessing learning (at least one direct method required)</td>
<td>Student course evaluation (indirect measure).</td>
<td>Student course evaluation (indirect measure).</td>
<td>Student course evaluation (indirect measure).</td>
</tr>
<tr>
<td>Examination (direct measure).</td>
<td>Examination (direct measure).</td>
<td>Examination (direct measure).</td>
<td></td>
</tr>
</tbody>
</table>

3. The GFEC is interested to learn how departments balance faculty and staff teaching loads and responsibilities between new and existing programs. Discuss how the department or program is achieving balance, and what challenges supporting multiple programs may have created for teaching, student services, advising or funding. Also of interest is information on what if any assets are shared between programs, or additional benefits that have been realized.

We have balanced and/or transitioned faculty and staff teaching loads in the delivery of the PCC Certificate in response to faculty retirements and understanding of the needs of faculty to teach on-campus courses. Furthermore, we provide significant TA and grading support at levels higher than on-campus classes given the unique delivery and nature of this curriculum in an online platform. Finally, the admission requirements for the PCC Certificate are strict such that unprepared students do not put undue burdens on the instructional staff. The following is a summary of how we balance the needs of faculty and teaching staff (see Table 3):

- For ECE411, Dr. Rich Schiferl is the instructor of record and, as an Adjunct Assistant Professor, was recently reappointed in the spring of this year for a 3-year appointment extension. As Rich is a very dedicated and popular instructor, this appointment assures the long-term sustainability, consistency, and ability to deliver this course online to PCC students. This course is taught online once per year.
• For ECE412, Dr. Stephen Fredette teaches this course. We have worked to deliver this course in parallel to on-campus delivery to minimize the load on the instructor. This course is taught online once per year.

• For ME446, Dr. Michael Zinn now teaches this course, which was historically taught by Dr. Neil Duffie. As Dr. Zinn also teaches a separate online course in Robotics each spring, we have removed ME446 as a Spring online offering in response to faculty load.

Table 3: Course Schedule

<table>
<thead>
<tr>
<th>Fall</th>
<th>Spring</th>
<th>Summer</th>
</tr>
</thead>
<tbody>
<tr>
<td>ECE 355</td>
<td></td>
<td>ECE 355</td>
</tr>
<tr>
<td>ECE 411</td>
<td>ECE 412</td>
<td></td>
</tr>
<tr>
<td>ME 446</td>
<td></td>
<td>ME 446</td>
</tr>
</tbody>
</table>

4. Please describe how your program has ongoing and broad faculty commitment, including governance, to ensure its continued success. If applicable, reflections from faculty and staff can be included here or as an appendix. Also consider if implementation of this program is supporting the Department and/or School/College’s current strategic goals.

Faculty leadership in this program includes Dr. Thomas Jahns as the Faculty Director and Dr. Bulent Sarlioglu as a core member of the Admissions Committee and director of numerous professional development short courses that serve as very effective marketing and promotion feeders into the PCC program. Further, this program is strongly supported by and in alignment with the Wisconsin Electric Machines and Power Electronics Consortium (WEMPEC). The learning goals of the PCC Certificate are strongly in alignment with the objectives within WEMPEC to deliver research, outreach, and service in the newest technologies and techniques in electric machines, power electronics, actuators, sensors, drives, motion control, and drive applications. The ability of the PCC program to support TA and grading positions is a strength of the program with respect to faculty involvement, as routinely acknowledged by program faculty. As the mission statement of EPD is to

provide engineering and technical professionals with the knowledge and skills to benefit their careers, industry, and society

programs and certificates of this type are also in alignment with the strategic goals of EPD, which is now an office within the College of Engineering.
**Operations and Administration**

5. **Illustrate how the program has either brought in NEW and ADDITIONAL students (required for non-pooled programs), and/or how overall enrollment in your related programs has remained steady. If unanticipated overlap with existing programs has resulted, discuss steps to mitigate the overlap.**

   In the Fall of 2015, we had 24 students in the Power Engineering online MS. In the Spring of 2019, we had 35 Power Engineering online MS students. This program growth is directly attributable to the implementation and delivery of the PCC Certificate. The PCC Certificate does not compete with existing programs, particularly as our online students are full-time professionals that work at companies such as United Technologies Aerospace Systems, Rockwell Automation, General Motors, Boeing, GE Healthcare, John Deere, and ABB.

   Projections for annual enrollment in the PCC Certificate was 18 at the time of Certificate approval in 2015. As of the Spring of 2019, we had 25 active PCC Certificate students, which is higher than anticipated levels and reflective of program participation over the past several years.

6. **Funding Considerations**

   a. **For traditional/pooled programs – How is the program successfully funding its students?**

      Not applicable.

   b. **For non-pooled programs – Provide a brief summary of projected vs. actual revenues and expenses. Does the program have sufficient enrollment for sustainability? Discuss the current market outlook compared to the original marketing study, and plans to grow or change the program to become sustainable.**

      In FY17, FY18, and FY19, the PCC Certificate and Power Engineering MS were financially administered jointly due to the significant overlap in faculty, curriculum, and program director support. In addition, as there is significant overlap in coursework and students from the former online Control MS degree in Mechanical Engineering, some expenses and income from this separate degree program is included in the financials. Table 4 presents the revenues and expenses for this joint set of programs. As provided in Table 4, the overall PCC Certificate is part of an online platform of programs that is academically and financially successful with strong net positive financials.
Table 4: Financials including the PCC Certificate and Power Engineering

<table>
<thead>
<tr>
<th>FY</th>
<th>Income</th>
<th>Expenses</th>
<th>Net</th>
</tr>
</thead>
<tbody>
<tr>
<td>2017</td>
<td>$528,832</td>
<td>$292,538</td>
<td>$236,294</td>
</tr>
<tr>
<td>2018</td>
<td>$610,219</td>
<td>$319,042</td>
<td>$291,177</td>
</tr>
<tr>
<td>2019</td>
<td>$538,796</td>
<td>$235,888</td>
<td>$302,908</td>
</tr>
</tbody>
</table>

7. If the program admits international students, describe how program processes address length of stay visa issues, online course restrictions, and needing ESL services.

Although the PCC Certificate does admit international students, it is an online program and thus visa issues and ESL services are not applicable.

8. Are there any issues impacting the program’s long-term sustainability? If so, what support would you like to help you succeed?

The PCC Certificate program has demonstrated financial sustainability and a three-year record of attracting and maintaining a student base of approximately 22 to 28 students per year. The program is somewhat self-limiting in growth because faculty leadership generally limits admissions to those students with an undergraduate degree in ECE (or equivalent) with sufficient academic preparation in core areas such as circuits, electrodynamics, and electromechanical energy conversion. As such, students with undergraduate degrees in Mechanical Engineering, for example, that are professionally transitioning into this field have difficulty with admission. Furthermore, a significant number (approximately 40%) of PCC Certificate students do not progress into the full Power Engineering online MS program, largely because of the rigor and time commitment needed to be successful in the PCC Certificate.

There is the possibility to expand the availability of online preparatory courses that would onboard students without sufficient ECE coursework (e.g., circuits, electrodynamics) to be able to participate in this program. Electrification is a significant grand challenge worldwide, and this PCC Certificate program could be a pivot point to provide the professional expertise necessary to advance the profession in this arena. If this growth arena was pursued, additional time and commitment of program director, marketing, and learning technologies support would be necessary to propel this growth.