TO: The Engineering Faculty

FROM: The Davidson of Chemical Engineering

RE: New Graduate Certificate in Healthcare Technology

The Faculty of the Charles D. Davidson School of Chemical Engineering have approved the following addition of the new Chemical Engineering Graduate Certificate in Healthcare Technology. This action is now submitted to the Engineering Faculty with recommendation for approval.

Description:
The Chemical Engineering Graduate Certificate in Healthcare Technology ("certificate") is being proposed to meet the educational needs of engineers working in the healthcare field while also strengthening the workforce pipeline of the field in general. The healthcare industry is an essential component of the local and national economies and continued improvement in healthcare delivery is highly dependent on technology advances. Engineers, including many Purdue graduates, comprise a significant proportion of technical positions in both the biopharmaceutical and medical device sectors, especially in the areas of research and development, manufacturing, and supply chain. These functions require a well-educated engineering workforce to support new product development and manage existing product portfolios. By helping to address this requirement, this certificate allows Purdue University to support an economically critical industry through its educational mission. Moreover, this certificate offers individual students, whether already employed in or aspiring to the healthcare industry, advancement opportunities within this field.

Reason:
Based on feedback from healthcare companies employing Purdue graduates and the lengthy experience of the certificate's proposer (Dr. William Clark) in the medical device industry, some engineers and scientists may lack a broad understanding of the healthcare sector in which they work. Moreover, the insights that these individuals have into the operational and commercial aspects of their own companies may be somewhat limited. Specifically, they may not fully understand and appreciate the broader clinical implications of the product they are helping to develop or manufacture, such as the relevant patient population, regulatory pathway, and reimbursement structure. Thus, the certificate is needed to help students align better with their organizational structure and goals - in this regard, there are three specific learning priorities:

1. Developing a better understanding for engineers of the manner in which healthcare is delivered, especially with respect to the use of medical technology.
2. Recognizing that unmet clinical needs are the primary driving force for medical technology development.
3. Appreciating the impact of COVID-19-related changes on the healthcare landscape, especially with respect to medical technology development.

Please see attached document for more information about the certificate specifics, including information about target audiences and a detailed plan of study.

Dr. Sangtae Kim
Distinguished Professor and Head
Davidson School of Chemical Engineering

CC: William Clark, Professor of Engineering Practice, CHE

PURDUE UNIVERSITY | Davidson School of Chemical Engineering

Proposal to Establish a New Graduate Certificate

1. **College:** College of Engineering

2. **Department:** Chemical Engineering

3. **Certificate Title:** Healthcare Technology

4. **Effective Term:** Fall 2021

5. **THE POLICY AND GUIDELINES FOR GRADUATE CERTIFICATE PROGRAMS MAY BE FOUND AT THIS LINK:** http://catalog.purdue.edu/content.php?catoid=8&navoid=8305

   A Graduate Certificate program that requires 75% or more of its credits to be taken at the 50000 level or higher may fall into two categories:

   a. Postbaccalaureate: The Graduate School views these graduate certificate programs as being practitioner oriented, to be less than a master's degree, and that require a baccalaureate degree for admission.

   b. Postmaster's: The Graduate School views these graduate certificate programs as requiring a master's degree for admission.

   Please read description above and choose one:

   c. ☒ Postbaccalaureate
   d. ☐ Postmaster's

6. **Suggest a CIP code for the new program*:** 15.9999 Engineering Technologies and Engineering-Related Fields, Other

   CIP Code List for your reference: http://nces.ed.gov/ipeds/cipcode/crosswalk.aspx?y=55

   STEM CIP Code List for your reference: https://www.ice.gov/sites/default/files/documents/Document/2016/stem-list.pdf

   PLEASE NOTE: Per ICHE instruction, a new major (certificate) requires a unique CIP code and cannot be the same as other certificate CIP codes on your campus.

7. **Is this a STEM CIP code: ☒ Yes ☐ No**

8. **Rationale for CIP code choice:** The educational content of the certificate involves the application of engineering principles to the development and clinical use of healthcare technologies.

9. **Mode of Delivery:**
   ☒ Residential ☒ Digital (Online) ☐ Digital (Hybrid)

10. **List Technologies that will be used:** Personal computers, smartphones, and tablets can be used to access video lectures and download/complete assignments.

    Access to Instruction: Given the technologies described above, identify the instructional settings available to students (i.e.: home; workplace; libraries and other public, non-educational settings; K-12 schools; public campuses/centers)

11. **Access to Instruction:** Home; workplace; libraries and other public, non-educational settings

12. **Can students enroll from anywhere in the state? ☒ Yes ☐ No**

13. **If also offered on-campus, is online curriculum identical? ☐ Yes ☒ No**
    a. **If No, please explain:** Very minor variations in component courses of certificate to conform to online course schedules.

14. **If applicable, note how students will complete lab, studio, clinical, etc...:**

15. **State who will administer the program via Purdue Online** (Purdue program or outside vendor):
    Purdue Online College of Engineering

16. **Overview. Provide an overview of the certificate program proposal:**

    Purpose: (Briefly describe the purpose of the program, why it is needed, the target audience, the number of students expected to participate in the program, and the relation to relevant existing certificate programs, if any. Indicate whether the certificate is available to currently enrolled degree seeking students and/or non-degree seeking students. If certificate will be available to non-degree seeking students, provide demonstration of student demand. Indicate what percentage of the students who are expected to participate in the certificate program will be concurrently working toward a graduate degree at Purdue University.):
    a. **Purpose:**

       Purdue University is proposing the Graduate Certificate in Healthcare Technology ("certificate") to meet the educational needs of engineers working in the healthcare field while also strengthening the workforce pipeline of the field in general. The healthcare industry is an essential component of the local and national economies and continued improvement in healthcare delivery is highly dependent on technology advances. Engineers, including many Purdue graduates, comprise a significant proportion of technical positions in both the biopharmaceutical and medical device sectors, especially in the areas of research and development, manufacturing, and supply chain. These functions require a well-educated engineering workforce to support new product development and manage existing product portfolios. By helping to address this requirement, this certificate allows Purdue University to support an economically critical industry through its educational mission. Moreover, this

certificate offers individual students, whether already employed in or aspiring to the healthcare industry, advancement opportunities within this field.

The general purpose of the certificate is to educate students and working professionals across a broad spectrum of engineering and technical positions in the healthcare industry. The knowledge gained by these learners will serve several purposes, including solidifying and refreshing existing knowledge for some while introducing entirely new concepts to others. Irrespective of the motivation for a specific student, graduates of the certificate program will be prepared to support their healthcare organizations more effectively from both a strategy and implementation perspective. Moreover, the certificate will provide a point of differentiation for graduates within their organizations, positioning them for more rapid career advancement.

Based on feedback from healthcare companies employing Purdue graduates and the lengthy experience of the certificate's proposer (Dr. William Clark) in the medical device industry, engineers and scientists may not have a broad understanding of the healthcare sector in which they work. Moreover, the insights that these individuals have into the operational and commercial aspects of their own companies may not be deep. For example, engineers and scientists may become "siloed" in the relatively isolated roles that they play in the expansive process of developing a new medical technology. In this scenario, they may not fully understand and appreciate the broader clinical implications of the product they are helping to develop or manufacture, such as the relevant patient population, regulatory pathway, and reimbursement structure. Thus, the certificate program is needed to help students align better with their organizational structure and goals - in this regard, there are three specific learning priorities.

One priority is development of a better understanding for engineers of the manner in which healthcare is delivered, especially with respect to the use of medical technology. As suggested, an engineer's understanding of medical technology development and manufacturing processes should be expansive, including insights about downstream application of a technology in the clinical environment. This need is highlighted by two themes currently prioritized in medical technology development. One is the emphasis on using a "patient-centric" approach involving a comprehensive understanding of all the potential effects that a technology may have on a particular patient. In turn, this requires a development or manufacturing engineer to take a holistic approach based on a deep understanding of the patient population that will be using the product (e.g., the special needs of a blind diabetic patient using the product).

The other theme being emphasized in the healthcare product industry is the need to incorporate "real world evidence" (RWE) in development and manufacturing processes. Underlying the RWE concept is the common disparity in the results of product testing and evaluations done by a company before widespread clinical use and those generated after the product is more extensively utilized in the "real world". Contemporary product development, sustaining engineering, and manufacturing require engineers to be facile in the interpretation of RWE so that a company's product portfolio can be maintained efficiently. One of the courses comprising the certificate (*Analytical Approach to Healthcare*

Delivery) is designed to provide students foundational knowledge about clinical medicine, particularly from the perspectives of patient centricity and RWE.

Another learning priority for the certificate is to allow students to gain an understanding that unmet clinical needs are the primary driving force for medical technology development. For a variety of reasons, biomedical companies increasingly are expected to deliver truly innovative (rather than "me too") products that provide new options for the management of diseases that are frequently resistant to other treatments. To achieve this goal, engineers and scientists must first collaborate with others in their organizations to understand how the current limitations in managing a particular disorder define the innovation pathway. The second course comprising the certificate (*Medical Devices: Development and Clinical Application*) focuses on this aspect. In this course, the development of life-saving treatment for end-stage renal disease (i.e., dialysis) is used as a representative example of technology development in response to an urgent unmet clinical need. While the engineering aspects are emphasized, students also gain an appreciation of the market forces and health economic factors driving technology innovation.

The nature of this certificate requires the content to be dynamic and reflective of the rapidly changing healthcare environment. In this regard, both for engineers already working in the healthcare industry and aspirants, the impact of the COVID-19 pandemic on medical technology development has already been profound and will be long-lasting. ***The final learning priority of the certificate is to educate students about COVID-19-related changes in the healthcare landscape and their impact on medical technology development and manufacturing.*** In particular, the pandemic's effect on manufacturing and supply chains for biopharmaceutical and medical device companies is assessed. The third course comprising the certificate (*Medical Technology Development in the COVID-19 Era*) is specifically devoted to this topic.

In addition to the specific rationales provided above, the certificate fulfills the educational mission of the state of Indiana in several ways. The state, along with its robust commercial life sciences sector, is strongly motivated to educate and retain students with life science expertise for economic development. By providing the opportunity for students either to acquire *de novo* knowledge or recalibrate existing knowledge, this certificate supports the mission of Indiana (along with that of Purdue University) to be a world leader in the life sciences field.

From a higher education perspective, the certificate also addresses priorities and objectives of both the state of Indiana and Purdue University. Most engineers and scientists, including those in the healthcare industry, are lifelong learners and many would be interested in earning an advanced degree. However, family and work commitments preclude this possibility for most. On the other hand, the comprehensive educational content of this certificate affords such individuals the opportunity to expand and refine their technical knowledge. Thus, the certificate is a cost-effective and efficient offering to professionals interested in career advancements, many of whom may work for Indiana-based life sciences companies.

Finally, this certificate aligns with Purdue University's mission to expand educational opportunities beyond the traditional residential experience for students. Purdue is

recognized as a leader in online education, especially in the field of engineering, and a substantial infrastructure already exists to support the development and rollout of the program described in this proposal.

b. **Target Audience:**

Although not limited to such individuals, the target audience is students interested in applying their learnings in the biopharmaceutical and medical device sectors. Key student populations are expected to be:

- Current graduate students willing to learn about healthcare technology, gain a competitive advantage upon graduation, and be able to position themselves better in the job market.
- Working professionals with the potential of management/leadership positions in the healthcare field.
- Individuals who are not certain of committing to an extended master's degree program (whether residential or online) but would like to study advanced courses related to healthcare technology

c. **Expected Participation:**

While it is difficult to predict the number of students who will participate in the certificate program, one piece of information may be useful. Of the certificate's three component courses, *Analytical Approach to Healthcare Delivery* has already been taught as a Purdue Online course in the Summer 2020 term. The course generated substantial interest among students in the Purdue Online Interdisciplinary Engineering M.S. degree program, with 26 students ultimately enrolling for this first online offering. While the data are limited, this suggests strong demand for this course and the certificate program overall, especially since no similar program currently exists.

Once the program receives approval and students enroll in the certification, an immediate increase in enrollment from continuing education professionals is expected. Moreover, a greater frequency of courses in the future will facilitate completing the program in one academic year.

d. **Relation to Existing Certificates:**

This is a new certificate program at Purdue and is not related directly to any other certificate programs.

e. **Availability:**

The certificate program will be open to both degree seeking and non-degree seeking students, as well as continuing education professionals. It is anticipated that students from all these groups will enroll.

f. **Non-degree seeking student demand:**

Discussions have been conducted about the certificate with senior-level executives at several biopharmaceutical and medical device companies. The responses have been overwhelmingly positive, with the vast majority of industry representatives indicating they would recommend that younger colleagues enroll in the program.

In addition, the 26 students who enrolled in the *Analytical Approach to Healthcare Delivery* course in the Summer 2020 term (see above) largely worked in the biopharmaceutical or medical device industry. An informal survey of these students indicated there would be widespread interest for this course and related ones within their companies.

g. **Percentage working towards degree:**
While this is difficult to predict, a reasonable estimate is 25%.

17. **Fit in plan (**How does the program fit into the department's/ school's strategic and/or academic plan?):

It is anticipated the vast majority of students pursuing this certificate will have ties to the biomedical industry. One of the strategic priorities of the Davidson School of Chemical Engineering is to forge more collaborations with this industry, especially the biopharmaceutical sector. The motivation for this approach is creating research opportunities for faculty and employment opportunities for students. In the latter respect, Dr Clark has been the lead representative for not only the Davidson School of Chemical Engineering but also the College of Engineering in an academic/industry collaboration entitled Work Force of the Future (WFOTF). This initiative, sponsored by the International Society for Pharmaceutical Engineering, seeks to help academic institutions align their engineering and scientific curricula with the workforce needs of the biopharmaceutical industry. Learnings from the WFOTF process have been applied in several respects during development of the certificate's educational content.

On a broader scale, the certificate's basis in clinical medicine is strongly aligned with Purdue University's Life Sciences Initiative. One of the missions of this initiative is to address some of the world's most challenging medical problems, including cancer along with inflammatory, infectious, and neurologic disorders. Students in the certificate program will learn about these diseases along with many others posing a substantial public health burden. This learning will range from gaining an understanding of the discovery and development processes for new medical technologies to the application of these therapies in clinical practice.

18. **Nature of certificate** (Briefly describe the nature of the certificate and any contractual or cooperative agreements with this certificate program. If you have partnered or contracted with a non-accredited entity, either institution or corporation, to offer courses (content or platform), identify the information or services provided by the entity and the percentage or portion of the educational program the entity is providing)**:**

This is a course-based certificate that provides students and continuing education professionals the opportunity for advanced learning in the healthcare technology field. It consists of three courses that have a Chemical Engineering designation (all listed as CHE 59700 for the time being):

- Analytical Approach to Healthcare Delivery (next offered: Summer 2021)

- Medical Devices: Development and Clinical Application (first offered: Summer 2021)
- Medical Technology Development in the COVID-19 Era (first offered: Fall 2021)

These required courses for the certificate are all delivered through Purdue Online. Graduate students from the Purdue Online Interdisciplinary M.S. program and other Purdue graduate engineering programs can join the certificate program. Upon completion of the required courses, students will be granted the certificate in addition to the main degree they pursue. The certificate is also available to continuing education professionals.

There are no contractual cooperative agreements with any entities.

19. **Attach a completed Purdue University Gainful Employment (GE) Certificate Worksheet (Appendix O).** To be completed by the department head to determine Title IV Federal Student Aid eligibility for certificate programs. Questions regarding the completion of the worksheet should be directed to the Executive Director, Department of Financial Aid.

    Worksheet found here:
    http://catalog.purdue.edu/mime/media/8/70/Gainful+Employment+%28GE%29+Certificate.pdf

20. **Licenses or certifications** (Describe any specific licenses or certifications which graduates of the program will be eligible to pursue, including the agency that issues the license or grants the certification. Indicate whether the license or certification is required for entry into the profession, and the extent to which it will help graduates find jobs or earn higher salaries.):

    Completion of this certificate program is not necessarily expected to provide the sole basis for licensure or certification from a healthcare-related organization. Nevertheless, it is anticipated that completion of the program will enhance a student's chances of joining field-specific trade organizations, such as the International Society for Pharmaceutical Engineering, Medical Device Manufacturers Association, and AdvaMed.

21. **Admissions requirements** (If admission requirements exceed those required by the Graduate School, describe them: (a) degree prerequisites, (b) minimum GPA, (c) minimum scores for the TOEFL, TOEFL iBT, and IELTS, if not, restate the requirements of the Graduate School.)**:**

    Pre-requisites: At least one semester of each of the following (at the college level):

    - Biology
    - Physics (mechanics)
    - Calculus

    Items that are specified by the Graduate School:

    - Bachelor's degree from an accredited institution.
    - Minimum undergraduate GPA of 3.0/4.0 with the possibility of conditional admission for applicants who do not meet this requirement.

- Minimum TOEFL score of 550 or higher on the paper-based test, or 80 or higher on the Internet-based test (iBT) for applicants whose native language is not English. Applicants who take the TOEFL iBT must achieve the following minimum test scores, in addition to the overall required score of at least 80: reading, 19; listening, 14; speaking, 18; and writing, 18. Applicants taking the IELTS must score at least 6.5 on the Academic Module. Applicants taking the PTE must score at least 58.

Students from any discipline or field of study within the College of Engineering, College of Science, College of Health and Human Sciences, College of Pharmacy, and Purdue Polytechnic can apply and be admitted into the certificate program, regardless of their main field of study.

22. **Proposal must specify whether or not students who are currently admitted to a degree program are eligible to earn a certificate.**

    Proposal must state whether such students may:
    a. complete the certificate if it is in their major; or
    b. complete the certificate if it is not in their major.

    If the certificate program involves more than one major, items a) and b) above must be specified for students admitted to a degree program in each major, i.e., Is a degree-seeking student in major A, eligible to complete a certificate in major A? Is this student eligible to complete a certificate in major B? etc.

    The proposed certificate is a standalone program and is not related to any specific major. Students from any discipline or field of study within the College of Engineering, College of Science, College of Health and Human Sciences, College of Pharmacy, and Purdue Polytechnic are allowed to complete the certificate (as long as course prerequisites are satisfied). The Graduate Certificate is also available to those not admitted to a degree program but already have an undergraduate degree (continuing education professionals).

23. **Completion requirements.** Based on the Graduate School policies described in this document (III. Completion requirements) provide the following information:
    a. **Total number of credit hours required:** 9
    b. **Total number of credit hours that must be taken for a letter grade:** 9

24. **Specific course requirements.** (Specific course requirements, including any not-for-credit courses. (For any not-for-credit courses, the method of determining and signifying satisfactory completion of course requirements should be stated, e.g., pass/fail, or other, such as "excellent", "very good", or "good", but not "fair".)

    List of Courses:
    a. CHE 59700 Analytical Approaches to Healthcare Delivery
    b. CHE 59700 Medical Devices: Development & Clinical Application
    c. CHE 59700 Medical Technology Development in the COVID-19 Era

25. **For any not-for-credit courses, the method of determining and signifying satisfactory completion of course requirements should be stated:**

26. **Identify any courses that were developed specifically for this certificate:**

    The courses *Analytical Approach to Healthcare Delivery)* and *Medical Devices: Development and Clinical Application* have already been taught on campus several times whereas *Medical Technology Development in the COVID-19 Era* is a new course:

    CHE 59700 (Medical Technology Development in the COVID-19 Era): This course is designed to provide students with an understanding of how the COVID-19 pandemic is shaping medical technology development. Although curriculum development for this course is ongoing as the pandemic continues to evolve, topics to be covered include:

    - Clinical overview of COVID-19 (including therapeutic approaches, such as vaccines and monoclonal antibodies)
    - Regulatory considerations (especially emergency use applications)
    - Effect of COVID-19 on the operational aspects of biopharmaceutical and medical device companies
    - Critical role of diagnostics in COVID-19
    - Supply chain considerations related to COVID-19
    - Specific COVID-19 case studies from industry
    - Lasting effects of the COVID-19 pandemic (both on healthcare delivery and product development

    While the above information will be presented didactically in online lecture format, deeper assessments of key aspects will be assigned on a regular basis for applied learning. In this regard, oral and written reports on a topic of each student's choosing (in lieu of examinations) are an important component of the class. An additional way in which students will gain practical knowledge is through a series of case studies over the course of the semester.

27. **GPA Requirements:**
    a. **Minimum overall GPA for courses that are to be used to fulfill certificate requirements:** C-
    b. **Minimum grade for any course to be applied toward the certificate:** C-
    c. **Maximum number of credits that may be transferred from another institution:** 3
    d. **Maximum number of credits from undergraduate-level courses that may be used toward the certificate:** 3
    e. **Maximum time allowed for completion of the certificate:** 4 years

28. **Whether or not courses may be applied for credit toward more than one certificate. (**The Graduate School considers a certificate to signify competence in a particular area of study, and recognizes that such areas may overlap. On the other hand, there may be some courses for which it would not be appropriate to allow credit toward more than one certificate. Such restrictions, if any, should be stated.):

Students are allowed to apply the credit they earn in the certificate program to any other degree program or certificate.

29. **Number of credit hours taken prior to admission to the certificate program that may be counted toward completion of the certificate:** 9

30. **Briefly describe any specific learning outcomes, skills, and competencies students will learn after completing the certificate program:**

    After completion of the three courses comprising the certificate, students will be expected to have gained a better understanding of the healthcare industry, especially from a medical technology perspective. The learning outcomes for the entire certificate program are:

    - Characterize several major clinical conditions having a significant public health burden, especially from the perspective of medical technology use and health economics.
    - Analyze the major segments of medical products (pharmaceutical/biotechnology compounds and medical devices) along with the development processes and regulatory framework applying to each of these segments.
    - Understand the interactions between different organ systems and extracorporeal medical devices.

    - Apply fundamental chemical engineering principles in the analysis of treatments for specific clinical disorders, including end-stage renal disease, acute kidney injury, sepsis, cardiac failure, liver failure, and respiratory failure.
    - Understand the regulatory expectations for objective evidence in support of medical device approval, including concepts as part of the quality system, risk management, and design controls.
    - Recognize engineering roles in manufacturing considerations of a medical device, including concepts in lean manufacturing and process validation.

    - Describe the important clinical features of COVID-19 disease and the major preventive or therapeutic interventions.
    - Characterize the effect of the COVID-19 pandemic on the operational aspects of biopharmaceutical and medical device companies, especially from the development, manufacturing, and supply chain perspectives.

    In order to ensure that students are gaining the skills, knowledge, and abilities needed to be successful, Purdue University routinely engages in evaluation and assessment of course-level, program-level, and institution-level learning outcomes. Below are examples of course-specific assessment criteria that will be part of the evaluation process for all three of the component courses:

    - Targeted exam questions and homework sets on the principles of healthcare technology along with the ability to apply the principles in the context of complex problems.
    - Individual as well as team assignments designed to demonstrate proficiency with the educational content of the certificate.
    - Peer feedback on team projects to measure the capacity for effective collaboration within a multi-disciplinary group.

- Active participation in class discussions to demonstrate comprehension of the subject matter and the ability to communicate individual perspectives.

Moreover, faculty are an integral part of the evaluation, assessment, and continuous improvement process. Data collected from the Purdue Office of Institutional Research, Assessment, and Effectiveness will be used to identify opportunities for adaptation and improvement in teaching/assessment methods, courses, and curricula.

31. **Describe how the responsible graduate program will administer the certificate.** (Guidelines may be found in Section IV. Administration, of the Policies and Procedures Manual found here: http://catalog.purdue.edu/content.php?catoid=8&navoid=8305Focus of the research or professional program):

    Items which are specified by the Graduate School:

    - Admission process: In general, the admission process should parallel that for the degree-seeking students at the graduate level.
    - To facilitate tracking of students who are enrolled in certificate programs, the Office of the Registrar will establish a special admission status for such individuals.
    - When a student completes requirements for a certificate, the graduate program responsible for that certificate will notify the Graduate School. The audit process for certifying completion of requirements is the responsibility of the academic unit awarding the certificate. The audit must include (a) the title of the certificate; (b) the department/school awarding the certificate; (c) the name of the student including PUID; (d) student status, i.e., degree or non-degree student; (e) the complete name of each course, including course prefix, and number; (f) the grade in each course; and (g) the semester and year each course is completed. Names and mailing addresses for non-degree students must be included with the audit. The Graduate School will then notify the Office of the Registrar.
    - Transcripting
        - Will be consistent for all graduate certificate programs throughout the Purdue system.
        - Each certificate earned will be posted separately upon completion of the requirements.
        - Graduate certificates will be recorded in the following manner:
            - Awarded: Graduate Certificate
            - Program: Graduate Certificate in Healthcare Technology
            - College: College of Engineering
            - Campus: Purdue, West Lafayette
            - Major: Graduate Certificate in Healthcare Technology
    - Postbaccalaureate certificates will be recorded in the same manner with the word "GRADUATE" replaced by "POST-BACCALALAUREATE".
        - Credits earned toward a certificate will be included in the computation of the overall GPA posted on the transcript.
    - The certificate, itself, will be printed by the Office of the Registrar at the West Lafayette campus. All certificates under the purview of the Graduate School that are awarded by Purdue University will share a common format and style.

- The certificate will be awarded jointly by the appropriate academic unit and the Graduate School. It will bear the signature of the head of the academic unit and the dean of the Graduate School.
- Certificates will be awarded at the normal times when degrees are awarded. The Office of the Registrar will include the certificate with the diploma for degree seeking students and mail the certificate to non-degree students.
- The academic unit offering the certificate must submit an annual report to the Graduate Council containing the following information:
    - the number of students admitted to the certificate program.
    - for each admitted student:
        - date admitted.
        - whether or not the student is also currently admitted to a degree program at Purdue, and, if so, which degree
        - number of credits completed toward fulfillment of certificate requirements.
    - the number of certificates awarded annually.

32. **List a Contact for this proposal with e-mail and phone#.*Participating faculty, including name, academic rank, and departmental affiliation:**

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