PROPOSAL TO ESTABLISH A NEW GRADUATE CERTIFICATE

This form should be used by programs seeking to establish a new graduate certificate. All sections should be completed.

The graduate certificate is a programmatic or linked series of courses in a single field or in one that crosses disciplinary boundaries. The graduate certificate facilitates professional growth for people who already hold the baccalaureate degree. The graduate certificate enables the university to respond to societal needs while promoting university cooperation with corporate, industrial, and professional communities.

This proposal template should be completed in full and submitted to the University Provost's Office [mail to: curriculumplanning@asu.edu]. It must undergo all internal university review and approval steps including those at the unit, college, and university levels. A program **may not** be implemented until the Provost's Office notifies the academic unit that the program may be offered.

GRADUATE CERTIFICATE

College/School: Ira A. Fulton Schools of Engineering

Note: Program ownership is coded at the College/School level first and may not be a center, department or division apart from it.

Department/Division/School: School for Engineering of Matter, Transport and Energy (CMULTISCI)

Proposing faculty group (if applicable)**:**   N/A

Name of proposed graduate certificate: Semiconductor Processing

Is a program fee required?   No, a program fee is not required.

Note: for more information about program fee requests, visit https://provost.asu.edu/curriculum-development/changemaker/form-instructions#fees

Is the unit willing and able to implement the program if the fee is denied?   N/A

Requested effective term and year: Summer   2020

(The first semester and year for which students may begin applying to the certificate)

Delivery method and campus or location options: *select all locations that apply*

☐ Downtown Phoenix   ☐ Polytechnic   ☒ Tempe   ☐ Thunderbird   ☐ West   ☐ Other: _____

☐ **Both** on-campus **and** ☐ ASU Online* **-** (check applicable campus(es) from options listed above)

☐ ASU Online only (all courses online and managed by ASU Online)

Note: Once students elect a campus or Online option, students will not be able to move between the on-campus and the ASU Online options. Approval from the Office of the University Provost and Philip Regier (Executive Vice Provost and Dean) is required to offer programs through ASU Online. Please complete the ASU Online Offering form in Curriculum ChangeMaker to begin this request. Prior to completing the online Curriculum ChangeMaker form, please contact EdPlus at asuonline@asu.edu who can provide you with additional information regarding the online request process.

Do Not Fill in this information: Office Use Only	CIP Code:
Plan Code:	

PROPOSAL CONTACT			
Name:	Tiffany Wingerson	**Title:**	Manager, Graduate Advising
Phone number:	480 965 4979	**Email:**	tiffany.wingerson@asu.edu

Please note: Proposals for new certificates also require the review and recommendation of approval from the University Graduate Council, Curriculum and Academic Programs Committee (CAPC), the Academic Senate (two readings), and the Office of the Provost before they can be put into operation.

The final approval notification will come from the Office of the Provost.

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1. OVERVIEW

Below, please provide a brief overview of the certificate, including the rationale and need for the program, potential size and nature of the target audience, information on comparable programs (at ASU and/or peer institutions), how this program would relate to existing programs at ASU, and any additional appropriate information.

With the recent demand by local industries for engineers with focused training in semiconductor processing and characterization, this certificate program provides students with a venue to obtain that training. The number of jobs in semiconductor processing has increased over 11% since 2017, and is expected to grow in the future as well. The Bureau of Labor Statistics shares that in 2026 there will be a need for 329,000 jobs in the area of semiconductor and other electronic component manufacturing (https://www.bls.gov/emp/tables/industry-employment-and-output.htm). An Emsi report generated for this graduate certificate emphasizing semiconductor processing shows similar results. Regional trends predict the job market will increase 7.6%, from 248,959 jobs in 2017 to 349,177 by 2023. This is an average increase of 20,043 jobs per year over the five-year period.

This program is attractive to current students and local professionals who are interested in obtaining employment or professional development, respectively in the areas of semiconductor device manufacturing and semiconductor process equipment manufacturing and electronic components manufacturing.

With the input of hiring managers and former graduate students working in various semiconductor manufacturing related industries, the faculty members have selected a series of courses focusing on semiconductor processing and characterization and process yield enhancement that will make the student uniquely prepared. There is only one other certificate in the US that would be comparable. However what differentiates this certificate is the proximity to major semiconductor manufacturing companies and major equipment manufacturers, which allows for infusion of state-of-the-art courses to be taught by local professionals in the field.

Students will be prepared for positions in process engineering, yield enhancement engineering, and materials/electrical characterization engineering.

2. ADMINISTRATION AND RESOURCES

A. Administration

How will the proposed certificate be administered (including recommendations for admissions, student advisement, retention, etc.)? Describe the administering body in detail, especially if the proposed certificate is part of a larger interdisciplinary agenda. How will the graduate support staffing needs for this proposed certificate program be met?

The Associate Director in the School for Engineering of Matter, Transport and Energy (SEMTE) will oversee the overall operation of the certificate program. This person will be responsible for admission decisions and curriculum development. The Graduate Advising Manager in SEMTE will have oversite of the advisement and retention activities. Graduate Advising in SEMTE has adequate numbers to handle the additional workload.

B. Resource requirements needed to launch and sustain the program

PROPOSAL TO ESTABLISH A NEW GRADUATE CERTIFICATE

Describe any new resources required for this program's success such as new staff, new facilities, new library resources, new technology resources, etc. If multiple units/programs will collaborate in offering this certificate, please discuss the resource contribution of each participating program. Letters of support must be included from all academic units that will commit resources to this certificate program.

None required.

C. Projected Enrollment:
How many new students do you anticipate enrolling in this program each year for the next three years?

3-YEAR PROJECTED ANNUAL ENROLLMENT			
Please utilize the following tabular format	**1st Year**	**2nd Year** (Yr. 1 continuing + new entering)	**3rd Year** (Yr. 1 & 2 continuing + new entering)
Number of students in certificate (Headcount)	5	15	25

3. STUDENT LEARNING OUTCOMES AND ASSESSMENT

A. List the knowledge, competencies and skills students should have attained by graduation from the proposed degree program. (Examples of program Learning Outcomes can be found at https://uoeee.asu.edu/. Go to the Assessment accordion dropdown and select Assessment Plan to view sample outcomes.)

Students graduating from the certificate program will demonstrate general competency in fundamental semiconductor processing and characterization.

Students graduating from the certificate program will be prepared to enter the semiconductor manufacturing industry.

B. Describe the plans and methods to assess whether students have achieved the knowledge, competencies and skills identified in the Learning Outcomes listed above. Please list measures and scales for each outcome. (You can find examples of assessment methods at https://uoeee.asu.edu/. Go to the Assessment accordion dropdown and select Assessment Plan to view sample measures.)

1. Students graduating from the certificate program will demonstrate general competency in fundamental semiconductor processing and characterization and yield enhancement.
Measure 1.1 – Students will complete a self-assessment survey at the end of their last semester in the certificate.
PC 1.1 – 80% of graduates will demonstrate proficiency in these areas.

Measure 1.2 – Review of student's transcript upon graduation.
PC 1.2 – 80% of graduates will have received B or better grades in all core courses required for the certificate.

2. Students graduating from the certificate program will be prepared to enter into semiconductor manufacturing industry and use their general competency in fundamental semiconductor processing and characterization and yield enhancement.
Measure 2.1 – – Students will complete a self-assessment survey at the end of their last semester in the certificate.

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PC 2.1 – 80% of graduates will demonstrate career readiness.

Measure 2.2 – Review of student transcripts upon graduation.
PC 2.2 – 80% of graduates will have received B or better grades in all courses required for the certificate.

4. **ACADEMIC REQUIREMENTS**

A. **Minimum credit hours required for certificate** (15 credit hour minimum)

   15

B. **As applicable, please describe culminating experience if required** (e.g., applied project, portfolio, capstone course, etc.)

   N/A

C. **Please state the satisfactory student academic progress standards and** guidelines (including any time limits for completion). All coursework used to complete an ASU graduate certificate must be completed within a six-year time limit, maintaining continuous enrollment.

   Students must abide by all policies set forth by the Graduate College and the Ira A. Schools of Engineering. Full time students can easily complete the certificate in two semesters; however, all students must complete the certificate program within six years and maintain continuous enrollment during that time. Students who are deemed unsatisfactory may be recommended to the Graduate College for dismissal from the certificate program.

D. **Will this proposed certificate program allow sharing of credit hours from another ASU degree program to be used as part of this certificate program?** (Please note that a maximum of 12 graduate-level credit hours taken as a non-degree student at ASU, including as a part of a certificate program, may be used towards a future graduate degree at ASU. No more than 40% of coursework towards the requirements of a graduate certificate can be completed prior to admission to the certificate program.)

   Yes

E. **Below, please list all required and elective courses in the appropriate boxes** (you may attach additional pages if necessary).

   Please ensure that all *new core* course proposals have been submitted to the Provost's office through the Curriculum ChangeMaker online course proposal submission system before this initiative is put on the University Graduate Council and CAPC agendas.

   Note: a minimum of 2/3 of the courses required for a graduate certificate must be at the 500-level or above.

Required Core Courses for the Certificate			
Prefix and Number	**Course Title**	**New Course?**	**Credit Hours**
EEE 530	Advanced Silicon Processing	No	3
IEE 572	Design Engineering Experiments	No	3
MSE 550	Advanced Materials Characterization	No	3
		Section sub-total:	9
Elective or Research Courses *(As deemed necessary by supervisory committee. Other courses may be used with approval of the academic unit.)*			
Prefix and Number	**Course Title**	**New Course?**	**Credit Hours**
CHE 598	ST: Six Sigma Methodology/Engineering	No	3

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	Experimentation		
EEE 536	Semiconductor Characterization	No	3
EEE 591	Seminar: Semiconductor Facilities/Cleanroom Practice	No	3
MAE 527	Finite Elements for Engineers	No	3
MSE 598	Concepts in Materials Science	No	3
MSE 548 CHE 518 MAE 518	Fundamentals of Microelectronics Packaging	No	3
		Section sub-total:	6
Culminating Experience (if applicable) *E.g. – Capstone course, portfolio, written comprehensive exam or applied project*			**Credit Hours**
none			
		Section sub-total:	
Total required credit hours			15

1. List all required core courses and total credit hours for the core (required courses other than internships, capstone course, etc.)**.**
2. Omnibus numbered courses cannot be used as core courses.
3. Permanent numbers must be requested by submitting a course proposal to Curriculum ChangeMaker for approval.

F. Current Faculty: Complete the table below for all current faculty members who will teach in the program.

Name	Rank	Highest Degree	Area of Specialization/Expertise	Estimated Level of Involvement
Terry Alford	Professor	PhD	Semiconductor Characterization	high
Lenore Dai	Professor	PhD	Six Sigma	low
Micheal Kozicki	Professor	PhD	Semiconductor Processing	low
Trevor Thornton	Professor	PhD	Semiconductor Processing	low
Greg Raupp	Professor	PhD	Semiconductor Processing	low
Douglas Montgomery	Professor	PhD	Design of Experiments	low

5. COURSES

New Courses Required for Proposed Certificate: Provide course prefix, number, title, credit hours and brief description for any new courses required for this certificate program. **none**

6. REQUIRED SUPPORTING DOCUMENTS
(Please label accordingly, i.e., Appendix or Attachment A, B, etc.)

Please include the following with your proposal:

A. Statements of support from all deans

B. Impact statements of heads of impacted academic units (programs with similar names/content, utilizing courses, faculty, etc.) Appendix II.

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APPENDIX I

OPERATIONAL INFORMATION FOR GRADUATE CERTIFICATES

(This information is used to populate the Graduate Programs Search website.)

1. **Proposed name of certificate:** Semiconductor Processing

2. **Marketing description** *(Optional - 50 words maximum. The marketing description should not repeat content found in the program description.)*

   Did you know semiconductor chips power many of the electronic devices we depend on every day? Used in everything from mobile phones and household appliances to the communications networks that will support autonomous vehicle fleets, semiconductor processing is more important than ever before. Be at the forefront of semiconductor technology as this field continues to advance.

3. **Provide a brief program description** *(Catalog type (i.e. will appear in Degree Search) – no more than 150 words. Do not include any admission or curriculum information)*

   This certificate provides a series of courses in semiconductor processing, packaging, and characterization that prepare students for careers in the industry or graduate studies. Students select from a set of core courses and technical electives.

4. **Delivery/Campus Information Options: On-campus only (ground courses and iCourses)**

5. **Campus(es) where program will be offered:**

   ASU Online curriculum consists of courses that have no face-to-face content. iCourses are online courses for students in on-campus programs. iCourses may be included in a program, but may not comprise the entirety of a program. On-campus programs must have some face-to-face content
   Note: Office of the Provost approval is needed for ASU Online campus options.

   ☐   ASU Online only (all courses online and managed by ASU Online)

   All other campus or location options (please select all that apply):

   ☐   Downtown Phoenix   ☐   Polytechnic   ☒   Tempe   ☐   West   ☐   Other: _____

   ☐   **Both** on-campus **and** ☐ ASU Online* - (check applicable campus(es) from options listed above)

   *Note: Once students elect a campus or Online option, students will not be able to move between the on-campus and the ASU Online options. Approval from the Office of the University Provost and Philip Regier (Executive Vice Provost and Dean) is required to offer programs through ASU Online. Please complete the ASU Online Offering form in Curriculum ChangeMaker to begin this request. Prior to completing the online Curriculum ChangeMaker form, please contact EdPlus at asuonline@asu.edu who can provide you with additional information regarding the online request process

   If the certificate program is ground only, it will only be open to international students who are already enrolled in a degree program at ASU and they must complete the certificate before the degree is awarded. If this certificate is ground only, please indicate this in the additional application information below.

6. **Admission Requirements**

   An applicant must fulfill the requirements of both the Graduate College and the Ira A. Fulton Schools of Engineering.

   Applicants are eligible to apply to the program if they have earned a bachelor's or master's degree in engineering or related field, from a regionally accredited institution.

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Applicants must have a minimum of a 3.00 cumulative GPA (scale is 4.00 = "A") in the last 60 hours of a student's first bachelor's degree program, or applicants must have a minimum of a 3.00 cumulative GPA (scale is 4.00 = "A") in an applicable master's degree program.

Applicants are required to submit:

1. graduate admission application and application fee
2. official transcripts
3. professional resume
4. proof of English proficiency

Additional Application Information

Applicants whose native language is not English (regardless of current residency) must provide proof of English proficiency.

International students who need an F1 or J1 visa will first need to apply to and be accepted into a graduate degree program prior to being considered for the certificate program. International students residing in the USA on other types of visas must adhere to all Graduate College policies and procedures regarding admission be considered for admission to this certificate program.

7. **Application Review Terms (if applicable session):**

Indicate the first term and year in which applications will be opened for admission. Applications will be accepted on a rolling basis after that time.

Note: It is the academic unit's responsibility to display program deadline dates on their website.

Terms	Years	University Late Fee Deadline
☒ Fall (regular) ☐ Session B	(year): 2020 (year):	July 1st October 1st
☒ Spring (regular) ☐ Session B	(year): 2021 (year):	December 1st February 8th
☒ Summer (regular) ☐ Summer B	(year): 2020 (year):	May 14th May 14th
Note: Session B is only available for approved online programs.		

Program admission deadlines website address: (The program does not have one at this time. We will contact academic.catalog@asu.edu to update once it is established.)

8. **Curricular Requirements:**

Curricular Structure Breakdown for the Academic Catalog:
(To be completed by the Graduate College)

Required Core (9 credit hours)
EEE 530 Advanced Silicon Processing (3)
IEE 572 Design Engineering Experiments (3)

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MSE 550 Advanced Materials Characterization (3)

Electives or Research (6 credit hours)

Additional Curriculum Information
Students should see the academic unit for available elective and research coursework.

9. **Keywords**: List all keywords that could be used to search for this certificate. Keywords should be specific to the proposed certificate – limit 10 keywords.

   semiconductor, processing, packaging, manufacturing, characterization

10. **Area(s) of Interest**

   A. Select **one (1)** primary area of interest from the list below that applies to this program.

☐	Architecture & Construction	☐	Interdisciplinary Studies
☐	Arts	☐	Law & Justice
☐	Business	☐	Mathematics
☐	Communication & Media	☐	Psychology
☐	Education & Teaching	☐	STEM
☒	Engineering & Technology	☐	Science
☐	Entrepreneurship	☐	Social and Behavioral Sciences
☐	Health & Wellness	☐	Sustainability
☐	Humanities		

   B. Select **one (1)** secondary area of interest from the list below that applies to this program.

☐	Architecture & Construction	☐	Interdisciplinary Studies
☐	Arts	☐	Law & Justice
☐	Business	☐	Mathematics
☐	Communications & Media	☐	Psychology
☐	Education & Teaching	☒	STEM
☐	Engineering & Technology	☐	Science
☐	Entrepreneurship	☐	Social and Behavioral Sciences
☐	Health & Wellness	☐	Sustainability
☐	Humanities		

11. **Contact and Support Information:**

Office Location - Building Code & Room: *(Search ASU map)*	Engineering Center G-Wing, Rm 207
Campus Telephone Number: (may not be an individual's number)	480 965 4979
Program Email Address: (may not be an individual's email)	semtegrad@asu.edu
Program Website Address: (if one is not yet created, use unit website until one can be established)	https://semte.engineering.asu.edu/
Program Director (Name):	Dr. Terry Alford
Program Director (ASURITE):	allnutt

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Program Support Staff (Name):	Tiffany Wingerson
Program Support Staff (ASURITE):	tdelpra
Admissions Contact (Name):	Amy Newberg
Admissions Contact (ASURITE):	anewber1

12. Application and iPOS Recommendations: List the Faculty and Staff that will input admission/POS recommendations to Gportal **and** indicate their approval for Admissions and/or POS:

NAME	ASURITE	ADMSN	POS
Tiffany Wingerson	tdelpra	X	X
Christine Quintero	csquint1	X	X
Andrea Brown	aabrow18	X	X
Amy Newberg	anewber1	X	X

<div align="center">

(NEW GRADUATE INITIATIVES)

PROPOSAL PROCEDURES CHECKLIST

</div>

Academic units should adhere to the following procedures when requesting new curricular initiatives (degrees, concentrations or certificates).

☐ **Obtain the required approval from the Office of the Provost to move the initiative forward for internal ASU governance reviews/approvals. Please see the academic strategic plan website at: https://provost.asu.edu/curriculum-development.**

☐ **Submit any new courses that will be required for the new curricular program to the Curriculum ChangeMaker online course approval system for review and approval.**

- Additional information can be found at the Provost's Office Curriculum Development website: Courses link
- For questions regarding proposing new courses, send an email to: courses@asu.edu

☐ **Prepare the applicable proposal template and operational appendix for the proposed initiative.**

☐ **Obtain letters or memos of support or collaboration (if applicable).**

- When resources (faculty or courses) from another academic unit will be utilized
- When other academic units may be impacted by the proposed program request
- if the program will have an online delivery option support will be required from the Provost's office and ASU Online. (*Please complete the ASU Online Offering form in Curriculum ChangeMaker to begin this request.*)

☐ **Obtain the internal reviews/approvals of the academic unit.**

- Internal faculty governance review committee(s)
- Academic unit head (e.g. Department Chair or School Director)
- Academic unit Dean (will submit approved proposal to the curriculumplanning@asu.edu email account for further ASU internal governance reviews (as applicable, University Graduate Council, CAPC and Senate)

Additional Recommendations

All new graduate programs require specific processes and procedures to maintain a successful program. Below are items that Graduate College strongly recommends that academic units establish after the program is approved for implementation.

☒ **Establish satisfactory academic progress policies, processes and guidelines** – Check within the proposing academic unit and/or college to see if there are existing academic progress policies and processes in place. If none have been established, please go to http://graduate.asu.edu/faculty_staff/policies and scroll down to the **academic progress review and remediation processes** (for faculty and staff) section to locate the reference tool and samples for establishing these procedures.

☒ **Establish a Graduate Student Handbook for the new degree program** – Students need to know the specific requirements and milestones they must meet throughout their degree program. A Graduate Student Handbook provided to students when they are admitted to the degree program and published on the website for the new degree gives students this information. Include in the handbook the unit/college satisfactory academic progress policies, current degree program requirements (outlined in the approved proposal) and provide a link to the Graduate Policies and Procedures website. Please go to http://graduate.asu.edu/faculty_staff/policies to access Graduate Policies and Procedures.

APPENDIX II

SUPPORT AND IMPACT STATEMENTS

Ira A. Fulton Schools of Engineering – Official Submission

From: Sergio Quiros <Sergio.Quiros@asu.edu>
Sent: Wednesday, April 24, 2019 2:23 PM
To: curriculumplanning@asu.edu
Cc: Mia Kroeger <Mia.Kroeger@asu.edu>; Tiffany Wingerson <Tiffany.Wingerson@asu.edu>; Jeremy Helm <JEREMY.HELM@asu.edu>
Subject: IFSE Proposal to establish a Graduate Certificate: Semiconductor Processing

Hello,

Attached is the following proposal:

Ira A Fulton Schools of Engineering

School for Engineering of Matter, Transport and Energy

Proposal to establish a Graduate Certificate

Semiconductor Processing

Best,

Sergio Z. Quiros

Specialist Senior, Academic and Student Affairs
Ira A. Fulton Schools of Engineering
Arizona State University
Tempe, AZ 85287-8109
Phone: 480/727-5770
Email: Sergio.Quiros@asu.edu

From: Bradley Rogers
Sent: Wednesday, March 13, 2019 12:54 PM
To: Cindy Boglin <Cindy.Boglin@asu.edu>
Subject: Semiconductor manufacturing certificate

Cindy

Regarding our support for the semiconductor manufacturing certificate coupled with the interest of faculty in TPS to have the opportunity to participate in such an initiative, we would like to point out the courses that we have in place that are related to this area. More specifically, the following courses are directly related to semiconductor manufacturing:

EGR 386: Integrated Circuit Manufacturing (Hunter)
EGR 488: Plasma Processing (PS: hasn't been taught in a while)
EGR 598: Principles & Applications of Scalable Nanomanufacturing (Azeredo)
EGR 598: Engineering in Semiconductors and Microelectronics (Hunter)
EGR 598: Micro/nano additive manufacturing (Chen, PS: applications in packaging and interconnects are covered)
MFG 482: Materials Science in Manufacturing (Song)

In addition, the following courses may also be of interest to students in this program:

EGR 598: Simulating Manufacturing Systems (Bekki)
EGR 598: Advanced Statistics for Manufacturing (AMK)

I apologize that I didn't include these details in the original email expressing our support for the program, but I hope that they can be added to provide more specific context to our earlier response.

Brad

Brad Rogers
Associate Director, The Polytechnic School
Ira A Fulton Schools of Engineering
ASU at the Polytechnic Campus
Sutton Hall, 140G
Mesa, AZ 85212

BRogers@asu.edu
480 727 1034

****

From: Bradley Rogers
Sent: Wednesday, March 13, 2019 9:57 AM
To: Cindy Boglin <Cindy.Boglin@asu.edu>
Subject: Re: Impact Statement for Graduate Certificate in Semiconductor Processing

The Polytechnic School has no objection to this program. In fact, the Manufacturing Engineering faculty have observed that students enrolled in our manufacturing programs may be interested in obtaining this certificate, and the some of the faculty have specific interest in

exploring collaborative relationships with faculty in SEMTE, especially in patterning for the semiconductor industry.

Brad Rogers
Associate Director, The Polytechnic School
Ira A Fulton Schools of Engineering
ASU at the Polytechnic Campus
Sutton Hall, 140G
Mesa, AZ 85212

BRogers@asu.edu
480 727 1034

School of Computing, Informatics, and Decision Systems Engineering, Ira A. Fulton Schools of Engineering – Impact Statement

From: Rene Villalobos <Rene.Villalobos@asu.edu>
Sent: Tuesday, March 12, 2019 12:52 PM
To: Allison Curran <Allison.Curran@asu.edu>; Nong Ye <nongye@asu.edu>
Cc: Sandeep Gupta <Sandeep.Gupta@asu.edu>
Subject: RE: Impact Statement for Graduate Certificate in Semiconductor Processing

Right now, we do not have a manufacturing component that is affected by this proposal and also they include one of our courses as a core course. So, We do not have any objections.

From: Meng Tao
Sent: Wednesday, March 13, 2019 12:36:47 PM
To: Robert Monahan
Cc: Joseph Palais; Stephen Phillips; Trevor Thornton; Michael Kozicki
Subject: RE: Impact Statement for Graduate Certificate in Semiconductor Processing

Dear Bob,

After consultation with PEP faculty, here is my impact statement:

The Physical Electronics and Photonics faculty in the School of Electrical, Computer and Energy Engineering support this new Graduate Certificate in Semiconductor Processing Program. It addresses a need by local semiconductor companies and we do not have a similar program in ECEE. Since the enrollment in the Program is projected to be small, 25 students by year 3, we expect that students in this Program will improve, but not severely impact, the utilization of regularly offered ECEE courses.

Let me know if this is fine from your perspective.

Meng

Meng Tao, Professor and Area Chair - Physical Electronics and Photonics
Laboratory for Terawatt Photovoltaics
School of Electrical, Computer and Energy Engineering
Arizona State University
PO Box 875706
Tempe, AZ 85287-5706
USA
Phone: +1 817 965 2030
Email: meng.tao@asu.edu