ESTABLISHING GRADUATE CERTIFICATES
ARIZONA STATE UNIVERSITY
GRADUATE COLLEGE

This form should be used by programs seeking to establish a new graduate certificate. All sections should be completed. Current graduate certificate guidelines may be found at
http://graduate.asu.edu/faculty_staff/policies/other_opportunities.

The graduate certificate is a programmatic or linked series of courses in a single field or one that crosses disciplinary boundaries. The graduate certificate facilitates professional growth for people who already hold the baccalaureate degree and may be freestanding or linked to a degree program. The virtue of the graduate certificate is that it enables the university to respond to societal needs and promotes university interaction with corporate, industrial, and professional communities.

Submit the completed and signed (chairs, unit deans) proposal to the **Office of Graduate Academic Programs** in the Graduate College. Mail code: 1003 and electronic copies to eric.wertheimer@asu.edu or Denise.Campbell@asu.edu

Please type.

Contact Name(s): *Clark Miller* *Ira Bennett*	Contact Phone(s): *480-965-1778* *480-727-8830*
College: *Graduate College*	
Department/School: *Consortium for Science Policy and Outcomes (CSPO)*	
Name of proposed Certificate: *Responsible Innovation in Science, Engineering and Society*	
Requested Effective Term and Year: *Fall 2013* (*e.g. Spring 2012*)	
Do Not Fill in this information: <u>Office Use Only</u> **CIP Code:**	

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.

> *The Graduate Certificate in Responsible Innovation in Science, Engineering and Society will provide documented credit for graduate students interested in responsible innovation, science policy, innovation policy and science meets society issues. Students will learn essential skills, knowledge, and methods for understanding the human and social dimensions of science and technology and their applicability for analyzing processes of innovation, expert advice, and large-scale technological systems. This certificate will be an excellent way for students in the natural sciences and engineering field to demonstrate an interest and competency in the subjects above, as well as a place for S&T professionals in industry and government to continue their education in these areas. The certificate program is expected to attract students from across campuses and the valley and will admit 10-20 students a year, resulting in a cohort of about 30-40 students at any given time.*

2. ADMINISTRATION AND RESOURCES

A. 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 staff for this proposed certificate program be met?

> *The certificate program will be housed within the Graduate College in partnership with CSPO and will be administered through CSPO, which has available a full time staff member for graduate program administration. The staff member will coordinate the student experience in the certificate program (admissions, advising, program development, social activities); as well as focus on student career development (career skills training, identifying internship/fellowship opportunities, and coordinating the alumni network). This person reports to the CSPO Associate Director, who will oversee the certificate*

program, academically and administratively, and will be responsible for ensuring the availability of necessary course offerings.

B. What are the resource implications for the proposed certificate, including any projected budget needs? Will new books, library holdings, equipment, laboratory space and/or personnel be required now or in the future? 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.

We do not foresee new resources necessary for the formation of this certificate program.

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3. ADMISSIONS PROCEDURES AND CRITERIA

A. **Admission criteria** – Applicants must meet the admissions criteria for the Graduate College. Please also include any other additional admission requirements, e.g. type of undergraduate degree, minimum GPA, tests and/or entry-level skills that are required for this certificate program. (http://graduate.asu.edu/faculty_staff/policies/admissions)

DEGREE: Applicants must have earned a U.S. bachelor's degree or higher from a regionally accredited institution or the equivalent of a U.S. bachelor's degree from an international institution that is officially recognized by that country.

GPA: Applicants must have maintained a "B" (3.00 on a 4.00 scale) grade point average (GPA) in the last 60 semester hours or 90 quarter hours of undergraduate coursework.

INTERNATIONAL STUDENTS: International students that need an F1 or J1 visa will first need to apply to and be accepted into a master's or doctoral program prior to being considered for the certificate program. International students residing in the USA on other visa types must adhere to all Graduate College policies and procedures regarding admission be considered for admission to this certificate program.

ENGLISH PROFICIENCY: If the student is from a country whose native language is not English (regardless of where the student may now reside), the student must provide proof of English proficiency. Acceptable proof is as follows (or the most current requirements at http://graduate.asu.edu/admissions/international/english_proficiency):
- TOEFL score of at least 550 (PBT) or 80 (iBT)
- IELTS overall band score of at least 6.5 with no band below 6.0.
- Pearson Test of English (PTE) score of at least 60

B. **Application Review Terms**
Indicate all terms for which applications for admissions are accepted and the corresponding application deadline dates, if any:

To select desired box, place cursor on the left side of the box, right click mouse, select **Properties**, under **Default Value** select **Checked**, press **OK** and the desired box will be checked

        ☒ Fall   Deadline: **(June/2013)**

        ☒ Spring   Deadline: **(October/2013)**

        ☒ Summer   Deadline: **(March/2014)**

C. **Projected annual admission/enrollment**
How many students will be admitted immediately following final approval of the certificate? What are enrollment projections for the next three years?

10-20 students will be admitted annually creating a standing cohort of approximately 30-40 students at any given time. We anticipate that students will take one course per semester, which works out to 5 semesters. We expect 5-10 students in Year One; 15-25 students in Year Two; and 30-40 students in Year Three.

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4. ACADEMIC REQUIREMENTS

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

> ***15 credit hours***

B. Please describe the primary course delivery mode, (e.g., online, face-to-face, off-site etc.). Please note: If this proposed initiative will be offered <u>completely</u> online, clearly state that in this section.

> ***Face-to-face***

C. As applicable, please describe culminating experience required (e.g., internship, project, research paper, capstone course, etc.)

> ***Students must complete a 3-credit structured practical experience supervised by an ASU faculty member or, with ASU faculty oversight, an approved mentor outside the university. The associated course would be "HSD 580: Practicum".***

D. What knowledge, competencies, and skills (learning outcomes) should students have when they graduate from this proposed certificate program? Examples of program learning outcomes can be found at (http://www.asu.edu/oue/assessment.html).

> - ***Students will understand the role of the government and the private sector in the innovation process.***
>
> - ***Students will have a practical, theoretical and philosophical understanding of ideas of responsibility as they relate to both innovation and research.***
> - ***Students will learn the history of responsible research and innovation and be able to relate that to current efforts and potential future directions of the field.***
> - ***Students will be able to apply principals of responsible research and innovation to their own work.***

E. How will students be assessed and evaluated in achieving the knowledge, competencies, and skills outlined in 4.D. above? Examples of assessment methods can be found at (http://www.asu.edu/oue/assessment.html).

> ***Students will receive thorough evaluation of individual assignments and exams in all required and elective courses in the certificate.***
>
> ***Students will be required to participate in several team-based exercises through the course of the certificate, for which they will be evaluated by instructors and peers.***

F. Satisfactory student academic progress standards and guidelines (including any time limits for completion).

> ***Students will complete their courses with a B average. There is no time limit for completion, as long as students adhere to the completion timelines set forth by the Graduate College.***

G. 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 9 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.***

H. 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 ACRES online course proposal submission system. Please note: a minimum of 2/3 of the courses required for a graduate certificate must be at the 500-level or above.

Required Courses			**Credit Hours**
(Prefix & Number)	*(Course Title)*	*(New Course?)* Yes or No?	**(Insert Section Sub-total)** 3
HSD 540	**Responsible Innovation and Research**	Y	**3**
	(submitted in CHANGEMAKER 9-17-12)		
Electives			**Credit Hours** 9

Total of nine credit hours from the suggestions below, or the student may submit other courses for approval to the program director			
CHM 501	Current Topics in Chemistry - Science Policy for Scientists and Engineers	N	1
BIO 611	Current Topics in Responsible Conduct of Research (RCR) in Life Sciences - Conflicts of Interest	N	3
GTD 501	Global Technology and Development	N	3
ASB 591	Seminar - Social Dimensions of Science	N	3
BIO 591	Uncertainty in Decision-Making	N	3
BIO 515	Science, Technology and Public Affairs	N	3
HSD 501	Science and Technology Policy	N	3
HSD 502	Advanced Science and Technology Policy	N	3
HSD 503	Governing Emerging Technologies	N	3
HSD 504	Analysis of Large Scale Socio-Technological Systems	N	3
HSD 505	Science and Technology Policy Workshop	N	3
HSD 598	Special Topics - University Research: Evolution, Governance and Public Policy	N	3
CMN 557	Communication and Technology	N	3
BIO 591	Seminar - Biotechnology: Science, Law and Policy	N	3
SOS 591	Seminar - Environmental Ethics and Policy Goals	N	3
BIO 516	Foundations of Bioethics	N	3
LAW 703	Law, Science and Technology	N	3
Culminating Experience (if applicable)		**Credit Hours (Insert Section Sub-total)**	
HSD 580: Practicum		**3**	
Total required credit hours		**15**	

5. PRIMARY FACULTY PARTICIPANTS - Please list all primary faculty participants for the proposed certificate, including home unit and title. You may attach additional pages if necessary.		
Name	**Home Unit**	**Title**
Ira Bennett	CSPO	Assistant Research Professor
Netra Chhetri	CSPO/Geography	Assistant Professor
Erik Fisher	CSPO/Political Science	Assistant Professor
Elizabeth Graffy	CSPO	Professor of Practice
David Guston	CSPO/Political Science	Professor
Lee Gutkind	CSPO/School of Communications	Professor
Merlyna Lim	CSPO/Justice Studies	Assistant Professor
Clark Miller	CSPO/Political Science	Associate Professor
Jason Robert	CSPO/School of Life Science	Associate Professor
Daniel Sarewitz	CSPO/SOLS and SOS	Professor
Cynthia Selin	CSPO/School of Sustainability	Assistant Professor
Jameson Wetmore	CSPO/SHESC	Associate Professor
Gregg Zachary	CSPO/School of Journalism	Professor of Practice

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

   Please include the following with your proposal:

   A. Sample plans of study for students in the proposed program

   B. Statements of support from all deans and heads of impacted academic units

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7. APPROVALS - If the proposal submission involves multiple units, please include letters of support from those units.

DEPARTMENT CHAIR or SCHOOL DIRECTOR (PRINT/TYPE)	
SIGNATURE *(See below)*	**DATE**

DEAN (PRINT/TYPE) Maria T. Allison (Graduate College)	
SIGNATURE *Maria T. Alli*	**DATE 9/24/2012**

The following section will be completed by GC following the recommendations of faculty governance bodies.

EXECUTIVE VICE PROVOST FOR ACADEMIC AFFAIRS AND DEAN OF THE GRADUATE COLLEGE	
SIGNATURE	**DATE**

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, 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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Appendix

Sample Plans of Study

1. Plan of Study

HSD 540: Responsible Innovation and Research	3 credit hours
CHM 501: Current Topics in Chemistry – Science Policy for Scientists and Engineers	3 semesters at 1 credit hours each
BIO 515: Science, Technology and Public Affairs	3 credit hours
HSD 505: Science and Technology Policy Workshop	3 credit hours
HSD 580: Practicum	<u>3 credit hours</u>
	15 credit hours

2. Plan of Study

HSD 540: Responsible Innovation and Research	3 credit hours
BIO 611: Current Topics in Responsible Conduct of Research (RCR) in Life Sciences - Conflicts of Interest	3 credit hours
BIO 516: Foundations of Bioethics	3 credit hours
LAW 703: Law, Science & Technology	3 credit hours
HSD 580: Practicum	<u>3 credit hours</u>
	15 credit hours

3. Plan of Study

HSD 540: Responsible Innovation and Research	3 credit hours
HSD 501: Science and Technology Policy	3 credit hours
HSD 503: Governing Emerging Technologies	3 credit hours
HSD 504: Analysis of Large Scale Socio-Technological Systems	3 credit hours
HSD 580: Practicum	<u>3 credit hours</u>
	15 credit hours