



**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 Joan.Brett@asu.edu or Denise.Campbell@asu.edu

Please type.

Contact Name(s): Susan Ledlow	Contact Phone(s): 480-965-8645
College: School of Sustainability	
Department/School: School of Sustainability	
Name of proposed Certificate: Certificate in Global Sustainability Leadership	
Requested Effective Term and Year: Fall 2011 (e.g. Spring 2010)	
Do Not Fill in this information: Office Use Only	
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 proposed Certificate in Global Sustainability Leadership program will provide training to US Army and Army National Guard leaders (field grade officers, senior civilians, and state environmental program managers) to enhance their ability to instill and manage sustainable practices throughout the Army and Army National Guard. Courses will emphasize providing leadership across lines of operation and areas of responsibility. The program emphasizes the application of sustainability tools, techniques, and concepts to issues both on bases and installations in the US, Europe and Asia and to bases in Iraq, Afghanistan, or other areas to which the Army may be deployed. Upon completion of this certificate program, students will be able to:

- **Analyze existing plans and integrate sustainability principles to enhance the triple bottom line: mission, environment, and community;**
- **Assess, from multiple challenge areas, any given situation and recommend sustainable changes or plans that meet both risk and mission requirements, and provide a return on investment;**
- **Utilize systems thinking to guide the selection of appropriate strategies, actions, and tools to promote sustainability;**
- **Evaluate the global/geopolitical impacts of everyday decisions, both in the Continental United States (CONUS) and Outside of the Continental United States (OCONUS);**
- **Integrate sustainability into existing Department of Defense (DOD) and Army requirements, strategies and policies;**
- **Develop strategies to communicate and collaborate with internal and external stakeholders in the US, Iraq, and Afghanistan; and,**
- **Demonstrate the leadership skills needed to foster an ethic of sustainability through education and example, both in the Continental United States and Outside of the Continental United States.**

The program consists of five courses and will confer a graduate academic certificate. The five courses may also be applied toward a master's degree in sustainability if the student simultaneously enrolls in the master's degree (MA or MS in Sustainability) or matriculates into the master's degree with 9 credit hours from the certificate and before beginning the fourth course.

Please note that the certificate is a *leadership* certificate in that it targets leaders in the Army and Army National Guard, and enhances their leadership skills by providing them with the additional knowledge and skills to address sustainability challenges. These skills involve: working with complex and long range problems; collaborating with other leaders to solve problems that are caused by and affect multiple areas of operation; and leading and managing the changes necessary to achieve sustainable solutions and practices.

The certificate is inherently *global* in that it is targeted to the specific needs of the Army, which operates in an international context. All courses specifically address how sustainability issues play out globally. For example, the Operationalizing Sustainability course teaches strategies for stakeholder engagement and community involvement. Students will consider what that might look like at Fort Bragg, NC, compared with community involvement strategies in Italy or Afghanistan. Our Energy and Built Environment will look at energy efficiency both at large bases in the US and small forward operating bases where combat troops are deployed.

Descriptions and learning outcomes are provided for all five courses in the Appendix.

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 administration of the certificate will be in the hands of the Dean and the faculty of the School of Sustainability. Admission recommendations will be decided by the graduate committee of the faculty and final recommendations for admissions will be sent to the Graduate College. Administrative processing of the applications and advising support will be handled by ASUonline as per the contract with the Army. These negotiations are pending, and the final signed contract can be forwarded to the committee after the signing ceremony in Washington DC.

- 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.

There are no budget implications for the proposed certificate that will fall on ASU. The US Army and National Guard will reimburse us for the cost of developing the program.

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/academic_policies/admissions.html

- **US Bachelor's degree or equivalent is required. Because sustainability is interdisciplinary, the degrees will come from a variety of fields. We anticipate a significant number from business, engineering, public administration, and natural resource management.**
- **3.0 GPA or equivalent in the last 60 semester hours (last 90 qtr hours)**
- **Statement of intent**
- **Resume or CV optional**

- 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 (month/year): Monthly approvals

Spring Deadline (month/year): Monthly approvals

Summer Deadline (month/year): Monthly approvals

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?

The first course will be offered in August 2011 and will have 25 students. The other four courses will be phased in each new 7-week session, and multiple sections will be offered. At the three-year mark, we hope to have 1,000 students.

4. ACADEMIC REQUIREMENTS

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

There are 15 credit hours (five, three-hour classes) that are required for the certificate.

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 completely online, clearly state that in this section.

The certificate is delivered completely online. Our Executive Dean, Rob Melnick has been working directly with VP Phil Regier and Provost Capaldi on the details of the certificate. The Provost approved the program in its early stages, and continues to provide input on its development.

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

There is no culminating experience required for the program. Students take two sequential courses (SOS 501 and SOS 502 and then three specific topic courses SOS 503, 504 and 505.

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>).

Upon completion of this certificate program, students will be able to:

- **Analyze existing plans and integrate sustainability principles to enhance the triple bottom line: mission, environment, and community;**
- **Assess, from multiple challenge areas, any given situation and recommend sustainable changes or plans that meet both risk and mission requirements, and provide a return on investment;**
- **Utilize systems thinking to guide the selection of appropriate strategies, actions, and tools to promote sustainability;**
- **Evaluate the global/geopolitical impacts of everyday decisions, both in the Continental United States (CONUS) and Outside of the Continental United States (OCONUS);**
- **Integrate sustainability into existing Department of Defense (DOD) and Army requirements, strategies and policies;**
- **Develop strategies to communicate and collaborate with internal and external stakeholders in the US, Iraq, and Afghanistan; and,**
- **Demonstrate the leadership skills needed to foster an ethic of sustainability through education and example, both in the Continental United States and Outside of the Continental United States.**

- 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 be assessed on both program level learning outcomes and course level learning outcomes through multiple methodologies, including case studies, team projects, discussion boards and written examinations.

As a means of assessing the program as a whole, we will use two methods:

1. **We will have a sample of students' projects assessed by a panel of faculty and military experts.**
2. **We will apply for certification through "Quality Matters," a national accrediting body for quality in online instruction.**

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

Students must complete the certificate within three years of the start date.

- 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. All credit hours for this certificate must be completed in this program. Please note that as stated previously in the proposal, the five courses of this certificate program may also be applied toward a master's degree in sustainability if the student simultaneously enrolls in the master's degree (MA or MS in Sustainability) or matriculates into the master's degree with 9 credit hours from the certificate and before beginning the fourth course.

- 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
<i>(Prefix & Number)</i>	<i>(Course Title)</i>	<i>(New Course?) Yes or No?</i>	(Insert Section Sub-total)
SOS 501	Foundations of Sustainability	Yes	3
SOS 502	Tools and Techniques for Sustainability	Yes	3
SOS 503	Operationalizing Sustainability	Yes	3
SOS 504	Energy and the Built Environment	Yes	3
SOS 505	Sustainable Military Acquisition and Logistics	Yes	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
Joshua Abbott	SOS	Assistant Professor
Rimjhim Aggarwal	SOS	Assistant Professor

John Anderies	SOS/SHESC	Associate Professor
George Basile	SOS	Associate Professor
Daniel Bodansky	SOS/Coll of Law	Professor
Christopher Boone	SOS/SHESC	Professor
Alexandra Brewis	SHESC	Professor
Harvey Bryan	SALA	Professor
Dan Childers	SOS	Professor
Maria Cruz-Torres	Transborder Studies	Associate Professor
Kevin Dooley	WP Carey	Professor
Hallie Eakin	SOS	Associate Professor
James Eder	SHESC	Professor
Eli Fenichel	SOLS	Assistant Professor
Matthew Fraser	SOS	Associate Professor
Nancy Grimm	SOLS	Professor
Subhrajit Guhathakurta	SGSUP/SOS	Professor
David Guston	SPGS	Professor
Edward Hackett	SHESC	Professor
Sharon Hall	SOLS	Assistant Professor
Sharon Harlan	SHESC	Associate Professor
Hilairy Hartnett	SOLS	Assistant Professor
Arjun Heimseth	SESE	Associate Professor
Marco Janssen	SHESC	Associate Professor
Ann Kinzig	SOLS	Professor
Chris Martin	Coll Tech Innovation	Professor
Pamela McElwee	SPGS	Assistant Professor
Rob Melnick	SOS	Professor
Clark Miller	PoliSci	Associate Professor
Rachata Muneeppeerakul	SOS	Assistant Professor
Charles Perrings	SOLS	Professor
Agami Reddy	SOS	Professor
Oswalo Sala	SOS/SOLS	Professor
Rick Shangraw	SOS	Professor
Kerry Smith	WP Carey	Professor
Bill Turner	SOS/SGSUP	Professor
Sander van der Leeuw	SOS/SHESC	Professor
Arnim Wiek	SOS	Assistant Professor
Eric Williams	SOS/SSEBE	Assistant Professor
Jianguo Wu	SOS/SOLS	Professor
Abigail York	SHESC	Assistant Professor

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

Please include the following with your proposal:

- A. Sample plan of study for students in the proposed program:
- B. Statements of support from all deans and heads of impacted academic units

- A. Sample plan of study for students in the proposed program:
- a. Fall 2011 A – SOS 501: Foundations of Sustainability
 - b. Fall 2011 B – SOS 502: Tools and Techniques for Sustainability
 - c. Spring 2012 A – SOS 503: Operationalizing Sustainability
 - d. Spring 2012 B – SOS 504: Energy and the Built Environment
 - e. Summer 2012 A – SOS 505: Sustainable Military Acquisition and Logistics

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

This certificate is only open to the Army and Army National Guard. Because this certificate is for a specifically targeted audience, no letters of support will be needed.

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

EXECUTIVE DEAN (PRINT/TYPE) Rob Melnick, Executive Dean (<i>Please see next page for signature</i>)	
SIGNATURE	DATE

DEAN (PRINT/TYPE) Sander van der Leeuw, Dean (<i>Please see next page for signature</i>)	
SIGNATURE	DATE

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

UNIVERSITY VICE PROVOST 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.

GF0809G-89

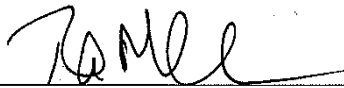
Approval Signatures – Global Certificate in Sustainability Leadership

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

EXECUTIVE DEAN (PRINT/TYPE)

Rob Melnick, Executive Dean

SIGNATURE



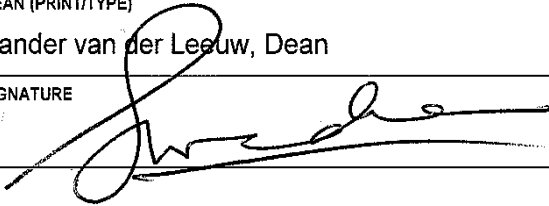
DATE

3/29/11

DEAN (PRINT/TYPE)

Sander van der Leeuw, Dean

SIGNATURE



DATE

3/28/2011

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

UNIVERSITY VICE PROVOST AND DEAN OF THE GRADUATE COLLEGE

SIGNATURE

DATE

APPENDIX

Course Descriptions and Learning Outcomes

SOS 501: Foundations of Sustainability

Foundations of Sustainability is designed to introduce uniform and civilian leaders to the major challenges in global sustainability: energy and climate change; urbanization; international development; water; biodiversity and habitat conservation; food and agriculture; and, and business and economics. It is also designed to introduce them to the major concepts in sustainability science: systems dynamics; scale; long-term development; tradeoffs; and, collaboration and participation.

As a result of taking this class, students will be able to

- Define sustainability in terms of both the traditional three pillars and the Army's three pillars;
- Discuss the scientific foundations of sustainability;
- Discuss the five central concepts of sustainability and apply them to each of the sustainability challenges;
- Explain the Framework for Strategic Sustainable Development and apply it to each of the sustainability challenges;
- Describe the critical features of each of the sustainability challenges;
- Explain the concepts of intergenerational and intragenerational equity;
- Explain how individual behaviors and choices influence each of the sustainability challenges; and,
- Articulate how the topics in the course relate to your own life, and to your work in the Army/Army National Guard.

SOS 502: Tools and Techniques for Sustainability

Forthcoming federal legislation and Executive Orders will set new standards for operational efficiencies, energy and water conservation, use of renewable energy sources, and waste minimization in the Army and Army National Guard. *Tools and Techniques for Sustainability* presents a systems approach to meet those standards by integrating principles of sustainability into existing Army policies, procedures, and reporting systems. The course features the Framework for Sustainable Strategic Development as an organizing framework to analyze systems and develop strategic plans to move toward sustainability.

As a result of taking this class, students will be able to:

- Explain the rationale for the FSSD and describe the steps;
- Use the FSSD to
 - identify and describe the features of particular systems,
 - define "success" for particular systems,
 - develop sustainable strategic guidelines, and
 - choose relevant actions to move towards sustainability;
- Apply systems modeling and industrial ecology tools to implement and assess sustainable practices in the areas of operations and training, the built environment, and logistics;
- Select additional appropriate tools to implement and assess sustainable practices in the areas of operations and training, the built environment, and logistics;
- Develop a strategic plan to implement sustainability in your organization;

- Select and apply strategies for stakeholder engagement in the planning and implementation process; and
- Incorporate behavioral and organizational change strategies into sustainability plans and policies.

SOS 503: Operationalizing Sustainability

Sustainability is a means to addressing the significant physical, statutory, and regulatory requirements that affect and can encumber the Army's ability to train Soldiers at ranges and maneuver areas across the United States. With hundreds of imperiled species proposed for federal protection in the next few years, threatened and endangered species and sensitive habitat will continue to be a concern. Participants in this course will explore how innovative training practices, improved land and natural resource management practices, and enhanced community relationships can ensure continued access to the land and water assets needed to maintain readiness and can help to "win hearts and minds." Proactive approaches to promoting well-being for soldiers, families, civilians, neighbors, and communities, both at installations and downrange, are stressed.

As a result of taking this class, students will be able to:

- Use the FSSD and five major sustainability concepts to describe operations as an interconnected system;
- Select appropriate tools, strategies (including behavioral change strategies), and procedures for promoting sustainability in operations and training;
- Develop a community involvement plan;
- Evaluate training and operations plans projects for sustainability implications (especially issues of long-term development);
- Analyze training course outcomes to incorporate sustainability principles;
- Develop sustainability criteria for inclusion in a given military task; and,
- Analyze mitigation for encroachment using sustainability principles.

SOS 504: Energy and the Built Environment

This course, *Energy and the Built Environment*, provides practical approaches to applying sustainability principles and practices to public works activities, housing, facilities operations and management, military construction, master planning, and energy management. Approaches to implement high performance sustainable building design, construction, operation and management, maintenance, and deconstruction are presented. Cost-effective, innovative strategies, such as highly reflective and vegetated roofs, to minimize consumption of energy, water, and materials are also covered.

Energy is essential to Army operations at home and abroad, whether it is energy to power barracks, offices, and depots, mobility fuels for tactical equipment, or fuels to support expeditionary forces. The availability, cost, and transportation requirements of fossil fuels create a substantial financial and logistical burden and energy security concern. Providing fuel support to combat operations also puts Soldiers at risk. The course provides an overview of approaches to energy conservation and use of renewable energy sources that support energy independence and long-term energy security, while reducing the Army's contribution of greenhouse gases that contribute to global climate change.

As a result of taking this class, students will be able to:

- Use the FSSD and five major sustainability concepts to describe energy and the built environment as an interconnected system;

- Select appropriate tools, strategies (including behavioral change strategies), and procedures for promoting sustainability in decisions and practices related to energy and the built environment;
- Describe sustainable design principles;
- Apply LCA (life cycle analysis) to construction, maintenance, and repair;
- Implement smart growth strategies to reduce footprint for all acts of stationing;
- Evaluate projects for partnership opportunities;
- Analyze plans, policies and procedures to avoid costs, identify additional conservation opportunities, and incorporate sustainability elements;
- Use modeling as a tool to for decision-making;
- Describe benefits of and develop strategies to move towards net zero; and
- Discuss behavioral and organizational changes needed to create a sustainable built environment.

SOS 505: Sustainable Military Acquisition and Logistics

This course, *Sustainable Acquisition and Logistics*, provides practical approaches to applying sustainability principles and practices to all areas of procurement, acquisition, and logistics. Through weapon systems acquisition or procurement of installation goods and services, the Army hopes to drive innovation and promote sustainability while reducing costs. The inclusions of energy and resource efficiency and other sustainability criteria in acquisition and procurement decisions can reduce long-term operation and maintenance costs, conserve resources, and continue to expand innovation throughout the supply chain. This course introduces the application of sustainability principles to procurement and acquisition, transportation, and materiel. The use of life cycle analysis and multi-criteria assessment for all 10 classes of supply is also featured significantly in the course.

As a result of taking this class, students will be able to:

- Use the FSSD and five major sustainability concepts to describe acquisition and logistics as an interconnected system;
- Select appropriate tools, strategies (including behavioral change strategies), and procedures for promoting sustainability in decisions and practices related to acquisition and logistics;
- Calculate, cost, carbon footprint, LCA for logistical issues like moves, large procurements/purchases, CFMO purchases;
- Evaluate *how best to incorporate green procurement*; and
- Assess the sustainability of procurement for each class of supply.