

P12-189



# THE FACULTY SENATE

December 19, 2011

## MEMORANDUM

**TO:** Dr. R. Bowen Loftin, President

**FROM:** Michael Benedik, Speaker *MJB*

**SUBJECT:** Approval of Graduate Council Item (FS.29.79)

At its regular meeting on December 12, 2011, the Faculty Senate approved the following curriculum item from the Graduate Council. The Faculty Senate submits it for your approval. Attached is a copy of the material sent to our Senators.

**GRADUATE COUNCIL**  
**Special Consideration**  
**College of Agriculture and Life Sciences**  
 Proposal for a Certificate in Military Land Sustainability

Thank you for your time and consideration. Please inform me of your action on this matter.

### Attachment

cc: Karan Watson  
 Pamela Matthews  
 Antonio Cepeda-Benito  
 Sandra Williams  
 Mark Hussey

Approved:       Reviewed:

R. Bowen Loftin, President

3/29/12

Date

**Texas A&M University**  
**New Certificate, Bachelors, Masters, or Doctoral Program**  
**♦ Proposal Checklist ♦**

Requested by the Department or Unit of: WFSC

**Program Type, Level, Designation, Title, Description, Hours**

Program Type      Certificate Program       Degree Program   
 Program Level      Undergrad Certificate       Grad Certificate       Bachelor       Master       Doctoral   
 Degree Designation (i.e., BS, BA, MA, MS, MAg, Med, PhD, EdD, etc.)      certificate  
 Title of proposed program:      Certificate in Military Land Sustainability  
 Proposed CIP Code (if known):      03.0206.0005

Brief program description (provide a catalog description for undergraduate and graduate certificates):

The *Certificate in Military Land Sustainability* is a web-based program that provides students with an understanding of factors that influence natural resource conservation and management of military lands. The program is comprised of coursework in three integrated, multidisciplinary thematic areas of emphasis: land management, policy analysis and development, and cultural competencies and conflict management. The *Certificate in Military Land Sustainability* can complement existing professional graduate degrees offered in the Departments of Ecosystem Sciences and Management (ESSM) and Wildlife and Fisheries Sciences (WFSC).

Minimum program semester credit hours (SCH)      Certificates - 12 hours\*      Bachelors - 120 hours      Masters - 30 hours

Proposed program hours:      15      \_\_\_\_\_      \_\_\_\_\_

\*12 hours minimum to appear on transcript

**Off-Campus or Distance Delivery**

% of Program a student can take off-campus or through Distance Education	<u>Program Start Date</u>	<u>SACS Approval**</u>	<u>When Provost needs to inform SACS</u>
<input type="checkbox"/> 25%	_____	Notification Only	-----
<input type="checkbox"/> 50%	_____	Approval Required	6 months before first day of program
<input type="checkbox"/> 80%	_____	Approval Required	6 months before first day of program
<input checked="" type="checkbox"/> 100%	_____	Approval Required	6 months before first day of program

\*\*Notification letter arranged through the Assistant Provost and sent by TAMU President.

**Program Delivery Mode**

	Location
<input type="checkbox"/> On-campus	_____
<input type="checkbox"/> Broadcast / TTVN	_____
<input type="checkbox"/> Specific off-campus location***	_____
<input checked="" type="checkbox"/> Distance Education / Internet	In-State <input type="checkbox"/> Out-of-State <input type="checkbox"/> Start Date <u>8/27/2012</u>
<input type="checkbox"/> Out-of-Country	Will this program be offered with another institution?      Yes <input type="checkbox"/> No <input type="checkbox"/> If yes, contact Assistant Provost for additional reporting requirements.

\*\*\*Is this an approved SACS location?      Yes       No       If no, a program prospectus must be sent to SACS.

Approved locations as of September 2009: TAMU-Galveston, TAMU-Qatar, University Center-The Woodlands, Dubai (EMBA)

**Program Funding**

Has program funding been finalized at the department or college level?      Yes       No   
 If no, explain or attach budget: \_\_\_\_\_

**Texas A&M University**  
**New Certificate, Bachelors, Masters, or Doctoral Program**  
**♦ Proposal Checklist ♦**

Will new costs for the first five years of the program be under \$2 million?  
 If new costs exceed \$2 million, coordinating board approval is required.

Yes  No

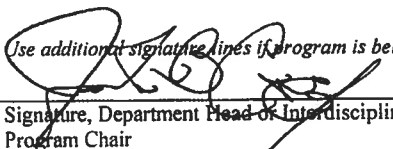
**Submitted by (Contact Person):**

Roel Lopez	roel@tamu.edu
Name Associate Director, Texas A&M Institute of Renewable Natural Resources and Professor in Wildlife and Fisheries Sciences	Email  (210) 222-8896
Title	Phone

**Certification Statement**

By signing below, the Dean of the College certifies the proposed program complies with coordinating board standards. If the program is delivered through Distance Education, the Dean of the College certifies that they are following the *Principles of Good Practice for Academic Degree and Certificate Programs and Credit Courses Offered Electronically*.

*Use additional signature lines if program is between three or more departments or colleges.*

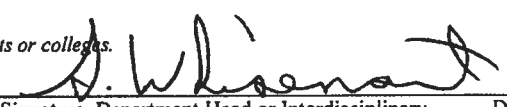
 7/13/11  
 Signature, Department Head or Interdisciplinary  
 Program Chair  
 John Carey, WFSC

Typed or Printed Name

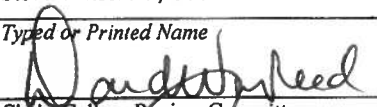
Chair, College Review Committee Date

Dean of College Date

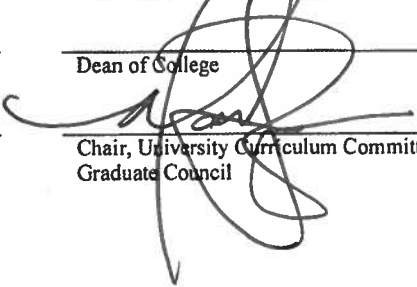
Chair, University Curriculum Committee or  
 Graduate Council Date

  
 Signature, Department Head or Interdisciplinary  
 Program Chair (if joint program)  
 Steve Whisenant, ESSM

Typed or Printed Name

 9/21/11  
 Chair, College Review Committee Date

Dean of College Date

 11-3-11  
 Chair, University Curriculum Committee or  
 Graduate Council Date

Additional Approvals Required: Faculty Senate and President.

## New Program Request Form for Certificate Programs, Bachelor's and Master's Degrees

**Directions:** An institution shall use this form to propose a new bachelor's or master's degree program. In completing the form, the institution should refer to the document *Standards for Bachelor's and Master's Programs*, which prescribes specific requirements for new degree programs. Note: This form requires signatures of (1) the Chief Executive Officer, certifying adequacy of funding for the new program; (2) a member of the Board of Regents (or designee), certifying Board approval, and (3) if applicable, a member of the Board of Regents or (designee), certifying that criteria have been met for staff-level approval. NOTE: Preliminary authority is required for all engineering programs. An institution that does not have preliminary authority for a proposed engineering program shall submit a separate request for preliminary authority prior to submitting the degree program request form. That request shall address criteria set in Coordinating Board rules Section 5.24 (a).

### Administrative Information

1. **Institution:** Texas A&M University – College Station

2. **Program Name** – Show how the program would appear on the Coordinating Board's program inventory (e.g., *Bachelor of Business Administration degree with a major in Accounting*):

Certificate in Military Land Sustainability

3. **Proposed CIP Code:** 03.0206.0005

4. **Brief Program Description** – Describe the program and the educational objectives:

The *Certificate in Military Land Sustainability* is a web-based program that provides students with an understanding of factors that influence natural resource conservation and management of military lands. The program is comprised of coursework in three integrated, multidisciplinary thematic areas of emphasis: land management, policy analysis and development, and cultural competencies and conflict management. At the completion of the graduate certificate, students will be able to define the roles and responsibilities of military resource managers and implement land management strategies to create durable and sustainable solutions to military installations and ranges. The *Certificate in Military Land Sustainability* can complement existing professional graduate degrees offered in the Departments of Ecosystem Sciences and Management (ESSM) and Wildlife and Fisheries Sciences (WFSC).

Number of Semester Credit Hours Required: 15

5. **Administrative Unit** – Identify where the program would fit within the organizational structure of the university (e.g., *The Department of Electrical Engineering within the College of Engineering*): The Department of Wildlife and Fisheries Sciences (WFSC) in the College of Agriculture and Life Sciences will manage the graduate certificate program. The program will be coordinated with the Departments of Ecosystem Science and Management (ESSM) and the Institute of Renewable Natural Resources (IRNR).

6. **Proposed Implementation Date** – Report the first semester and year that students would enter the program: Fall 2012

7. **Contact Person** – Provide contact information for the person who can answer specific questions about the program:

Name: Dr. Roel Lopez

Title: Professor and Associate Director  
Texas A&M Institute of Renewable Natural Resources

E-mail: roel@tamu.edu

Phone: (210) 222-8896

## Program Information

### I. Need

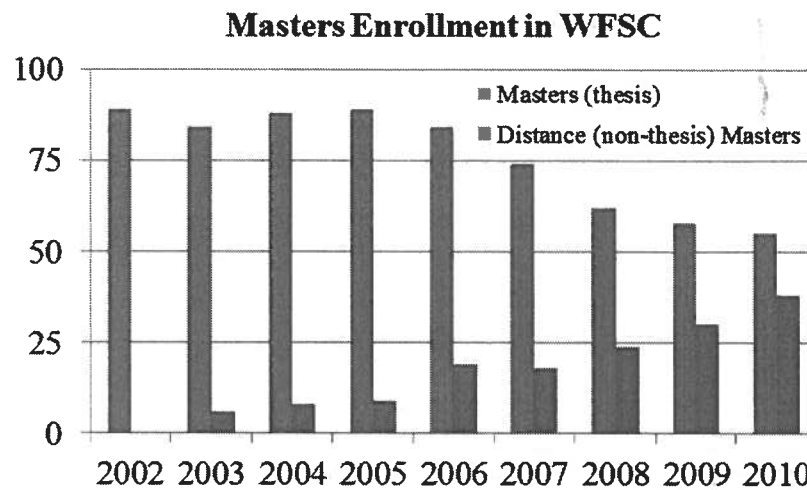
*Note: Complete I.A and I.B only if preliminary authority for the program was granted more than four years ago. This includes programs for which the institution was granted broad preliminary authority for the discipline.*

A. **Job Market Need** – Provide short- and long-term evidence of the need for graduates in the job market.

Universities are on the cusp of serving more than 2 million active military personnel as they return from Afghanistan and Iraq. The influx of veterans seeking graduate degrees present unique educational challenges for institutions of higher education, especially since landmark legislation (e.g., Post-9/11 New GI Bill) has increased educational benefits making college education more affordable for military service members and veterans (American Council of Education 2008). The Department of Defense (DoD) is a significant federal land user (>30 million acres) but unlike other federal land management agencies, natural resource management on DoD lands is unique in providing U.S. Armed Forces with realistic training and testing environments. Natural resource students are typically deficient in military land strategies and mission priorities. The proposed graduate certificate would serve to address this deficiency and offer prospective graduate students career opportunities within government and defense industry (see letters of support). The web-based coursework would offer maximum flexibility to students, particularly active military. The demand for DE graduate training has increased in recent years (see Figure below).

B. Student Demand – Provide short- and long-term evidence of demand for the program.

The demand in WFSC at the master's level for distance-based learning has steadily increased over the last 8 years (see Figure below). A web-based graduate certificate would serve to address this need particularly for those interested in pursuing a natural resource career with DoD environmental programs and defense industry. Furthermore, a graduate *Certificate in Military Land Sustainability* also would be attractive to current DoD environmental professionals interested in professional development relative to their current position.



C. Enrollment Projections – Use this table to show the estimated cumulative headcount and full-time student equivalent (FTSE) enrollment for the first five years of the program. (Include majors only and consider attrition and graduation.)

YEAR	1	2	3	4	5
Headcount	12	12	12	12	12
FTSE	7.5	7.5	7.5	7.5	7.5

## II. Quality

A. Certificate and Degree Requirements – Use this table to show the certificate and degree requirements of the program. (Modify the table as needed; if necessary, replicate the table for more than one option.)

Category	Semester Credit Hours
General Education Core Curriculum ( <i>bachelor's degree only</i> )	0
Required Courses	9
Prescribed Electives	6
Free Electives	0
Other ( <i>Specify, e.g., internships, clinical work</i> )	(if not included above)
TOTAL	15

- B. **Curriculum** – Use these tables to identify the required courses and prescribed electives of the program, and curriculum as it will appear in the undergraduate and graduate catalog. Note with an asterisk (\*) courses that would be added if the program is approved. (*Add and delete rows as needed. If applicable, replicate the tables for different tracks/options as shown in the undergraduate catalog.*)

Prefix and Number	Required Courses	SCH
WFSC 641*	Sustainable Military Land Management	3
WFSC 642*	Field Military Land Management	1
WFSC 643*	Geospatial Technology in Military Land Management	3
WFSC 681	Seminar in Military Land Management	2

Note: Field Military Land Management may be substituted by WFSC 684 Professional Internship with the prior approval of Administrative Director of the program for the 1 credit hour required.

The following list of Prescribed Electives may be selected from to complete the remaining 6 credit hours of required certificate hours.

Prefix and Number	Prescribed Elective Courses	SCH
ESSM 610	Rangeland Resource Management	3
ESSM 630	Restoration Ecology	3
ESSM 635	Ecohydrology	3

ESSM 636	Range and Forest Watershed Management	3
ESSM 651	Geographic Information Systems	3
ESSM 652	Advanced Topics in Geographic Information Systems	3
ESSM 660	Landscape Analysis and Modeling	3
ESSM 670	Ecosystems and Markets	3
ESSM 675	International Sustainable Community Development	3
ESSM 676	Leadership and Management of Environmental NGOs	3
WFSC 604	Ecological Modeling	3
WFSC 613	Animal Ecology	3
WFSC 618	Wildlife Study and Design	3
WFSC 622	Behavioral Ecology	3
WFSC 624	Dynamics of Population	3
WFSC 630	Ecology and Society	3
WFSC 636	Wildlife Habitat Management	3
WFSC 684	Professional Internship	1

- C. Faculty – Use these tables to provide information about Core and Support faculty. Add an asterisk (\*) before the name of the individual who will have direct administrative responsibilities for the program. *(Add and delete rows as needed.)*

<b>Name of <u>Core</u> Faculty and Faculty Rank</b>	<b>Highest Degree and Awarding Institution</b>	<b>Courses Assigned in Program</b>	<b>% Time Assigned To Program</b>
*Lopez, Roel Professor and Associate Director IRNR	Ph.D. in Wildlife and Fisheries Sciences; Texas A&M University	WFSC 641 WFSC 642 WFSC 643 WFSC 681	50%

<b>Name of <u>Support</u> Faculty and Faculty Rank</b>	<b>Highest Degree and Awarding Institution</b>	<b>Courses Assigned in Program</b>	<b>% Time Assigned To Program*</b>
Adams, Clark Professor	Ph.D., University of Nebraska	WFSC 630	10%
Boutton, Thomas Regents Professor and Texas AgriLife Senior Faculty Fellow	Ph.D., Brigham Young University	ESSM 624	10%
Burton, Diana Associate Professor	Ph.D., UC Berkley	FRSC 406 ESSM 670	10%
Feagin, Rusty	Ph.D., Texas A&M	ESSM 651	10%



Associate Professor	University		
Fujiwara, Masami Assistant Professor	Ph.D., Massachusetts Institute of Technology	WFSC 624	10%
Gelwick, Frances Associate Professor	Ph.D., University of Oklahoma	WFSC 613	10%
Grant, William Professor	Ph.D., Colorado State University	WFSC 604	10%
Hamilton, Wayne Senior Lecturer	MBA, Sul Ross State University	ESSM 610	10%
Locke, Shawn Extension Associate	Ph.D., Texas A&M University	WFSC 636	10%
Loh, Douglas Associate Professor	Ph.D., Texas A&M University	ESSM 675 ESSM 676	10%
Morrison, Michael Professor and Caesar Kleberg Chair	Ph.D., Oregon State University	WFSC 618	10%
Neill, William	Ph.D., University of Wisconsin, Madison	WFSC 604	10%
Packard, Jane Associate Professor	Ph.D., University of Minnesota	WFSC 622	10%
Knight, Robert Associate Professor	Ph.D., Texas A&M University	ESSM 636	10%
Srinivasan, Raghavan Professor & Director, Spatial Science Laboratory	Ph.D., Purdue University	ESSM 652	10%
Washington-Allen, Robert Assistant Professor	Ph.D., Utah State University	ESSM 652	10%
Whisenant, Steven Professor, Department Head	Ph.D., Texas A&M University	ESSM 630	10%
Wilcox, Bradford Professor	Ph.D., New Mexico State University	ESSM 635	10%
Wu, Ben Associate Dean of Faculties. Director of the Center for Teaching Excellence, Professor	Ph.D., University of Tennessee	ESSM 660	10%

\*Note: The listed support faculties' contribution to the certificate will be solely based on course delivery.

- D. Students – Describe general recruitment efforts and admission requirements. In accordance with the institution's Uniform Recruitment and Retention Strategy, describe plans to recruit, retain, and graduate students from underrepresented groups for the program.







The certificate will be promoted by ESSM, WFSC, and IRNR. In addition to posted program information on departmental websites, a website on the military certificate will be developed and maintained by IRNR. Student from other departments and colleges at Texas A&M with interest in military land management will also be recruited including future military civil engineers. Students will further be recruited through an extensive network of military natural resource managers in the four military branches (e.g., Army Environmental Command) and professional societies (e.g., National Military Fish and Wildlife Association). The target audience for this program will be active duty military, civilian natural resource managers on military installations, and graduate students seeking careers working as military lands. We anticipate a good representation of underrepresented groups in the program due to the current diversity in the military services. Furthermore, we will target recruitment efforts towards organizations that promote diversity in recruiting students (e.g., SACNAS, MANRRS, etc.) In order to be admitted to the program students must register their intent to participate in the program with the Department of Wildlife and Fisheries Science Program Administrator.

- E. Library – Provide the library director’s assessment of library resources necessary for the program. Describe plans to build the library holdings to support the program.

The current online library holdings are sufficient to provide course material. In addition, we will use currently available DoD documents in developing the courses as part of the Certificate in Military Land Sustainability.

- F. Facilities and Equipment – Describe the availability and adequacy of facilities and equipment to support the program. Describe plans for facility and equipment improvements/additions.

N/A

- G. Accreditation – If the discipline has a national accrediting body, describe plans to obtain accreditation or provide a rationale for not pursuing accreditation.

N/A

- H. Evaluation – Describe the evaluation process that will be used to assess the quality and effectiveness of the new degree program.

The PICA student evaluation system will be used to evaluate course material.

### III. Costs and Funding

Five-Year Costs and Funding Sources - Use this table to show five-year costs and sources of funding for the program.

Five-Year Costs		Five-Year Funding	
Personnel <sup>1</sup>	\$25,000	Reallocated Funds	

Facilities and Equipment	\$0	Anticipated New Formula Funding <sup>3</sup>	\$0
Library, Supplies, and Materials	\$5,000	Special Item Funding	\$0
Other <sup>2</sup>	\$0	Other <sup>4</sup>	\$0
<b>Total Costs</b>	<b>\$0</b>	<b>Total Funding</b>	<b>\$0</b>

1. Report costs for new faculty hires, graduate assistants, and technical support personnel. For new faculty, prorate individual salaries as a percentage of the time assigned to the program. If existing faculty will contribute to program, include costs necessary to maintain existing programs (e.g., cost of adjunct to cover courses previously taught by faculty who would teach in new program).
2. Specify other costs here (e.g., administrative costs, travel).
3. Indicate formula funding for students new to the institution because of the program; formula funding should be included only for years three through five of the program and should reflect enrollment projections for years three through five.
4. Report other sources of funding here. In-hand grants, "likely" future grants, and designated tuition and fees can be included.

### Signature Page

1. Adequacy of Funding – The chief executive officer shall sign the following statement:

*I certify that the institution has adequate funds to cover the costs of the new program. Furthermore, the new program will not reduce the effectiveness or quality of existing programs at the institution.*

\_\_\_\_\_  
Chief Executive Officer

\_\_\_\_\_  
Date

2. Board of Regents or Designee Approval – A member of the Board of Regents or designee shall sign the following statement:

*On behalf of the Board of Regents, I approve the program.*

\_\_\_\_\_  
Board of Regents (Designee)

\_\_\_\_\_  
Date of Approval

3. Board of Regents Certification of Criteria for Commissioner of Assistant Commissioner Approval – For a program to be approved by the Commissioner or the Assistant Commissioner for Academic Affairs and Research, the Board of Regents or designee must certify that the new program meets the eight criteria under TAC Section 5.50 (b): The criteria stipulate that the program shall:

- (1) be within the institution's current Table of Programs;
- (2) have a curriculum, faculty, resources, support services, and other components of a degree program that are comparable to those of high quality programs in the same or similar disciplines at other institutions;
- (3) have sufficient clinical or in-service sites, if applicable, to support the program;
- (4) be consistent with the standards of the Commission of Colleges of the Southern Association of Colleges and Schools and, if applicable, with the standards or discipline-specific accrediting agencies and licensing agencies;

- (5) attract students on a long-term basis and produce graduates who would have opportunities for employment; or the program is appropriate for the development of a well-rounded array of basic baccalaureate degree programs at the institution;
- (6) not unnecessarily duplicate existing programs at other institutions;
- (7) not be dependent on future Special Item funding
- (8) have new five-year costs that would not exceed \$2 million.

*On behalf of the Board of Regents, I certify that the new program meets the criteria specified under TAC Section 5.50 (b).*

\_\_\_\_\_  
Board of Regents (Designee)

\_\_\_\_\_  
Date

**\*\*\*CONCEPT PAPER\*\*\***

**Certificate in Military Land Sustainability (15 hrs)**

***Overview:***

The Department of Defense (DoD) is a significant federal land user (>30 million acres) but unlike other federal land management agencies, natural resource practices on DoD lands are unique in providing U.S. Armed Forces with realistic training and testing environments. The management of military lands (to include air and sea) and surrounding areas important in sustaining the mission of DoD offers unique career opportunities to prospective natural resource graduates, particularly veterans and active military interested in natural resource careers. Management of military lands and surrounding areas requires graduates with broad skills in natural resource sustainability concepts (to include military training needs) to apply “inside” and “outside” the military installation to include training in regional planning, policy development and implementation, and cultural competencies and conflict management.

The *Certificate in Military Land Sustainability* is a unique web-based graduate program administered through the Texas A&M Institute of Renewable Natural Resources in the TAMU College of Agriculture and Life Sciences. The *Certificate in Military Land Sustainability* requires the completion of 15 graduate credit hours (Table 1), and serves to complement existing professional and research oriented graduate degrees offered in the Departments of Ecosystem Sciences and Management (ESSM) and Wildlife and Fisheries Sciences (WFSC). Graduate degrees that can accompany the Certificate include: Ph.D. in Forestry, Ph.D. in Rangeland Ecology and Management, Ph.D. in Wildlife and Fisheries Science, Masters in Forestry, Masters in Rangeland Ecology and Management, Master in Natural Resource Development (MNRD), Master in Wildlife Science (MWS), and Master of Agriculture (MAgr) in Rangeland Ecology and Management. The proposed Certificate program consists of coursework in three integrated, multidisciplinary thematic areas of emphasis: (1) land management, (2) policy analysis and development, and (3) cultural competencies and conflict management.

***Target Students:***

- Active or returning veterans interested in natural resource training and/or a graduate degree. Unique graduate program for veterans.
- Career professionals with DoD or other state/federal agencies interested in continuing education training relative to working with the military.

***Approach:***

- Coursework on Military Land Sustainability strategies/practices “inside” and “outside” the fenceline.
- Coursework offered via distance learning to provide the maximum student flexibility.
- Optional field or workshop courses to further supplement training (e.g., range tour course).
- Opportunity to combine Certificate into existing graduate degree programs.
- Opportunity to integrate research experience on military installations (for students pursuing masters requiring a 6-hour professional paper).

***Outcomes:***

Provide students with knowledge and skills to manage lands (both DoD-owned and other areas important to mission sustainment) and associated natural resources. Specific student learning outcomes include an understanding of:



- Historic, current, and future use of military lands (to include competing interests of scarce resources), and general military land use requirements.
- Natural resource and environmental policies and emerging issues that impact military land uses and areas critical to mission sustainment.
- Natural resource planning approaches (e.g., INRMP, ITAM) on military lands and areas important to mission sustainment.
- Alternative approaches to promoting compatible land uses to include buffer programs, regional planning, incentive programs (e.g., Farm Bill, etc.), and community engagement.
- Ability to apply geospatial technology in decision-making and policy formulation in mission sustainment.
- Ability to work with diverse communities at local and regional scales, and apply basic principles in conflict resolution and consensus building.
- Ability to communication mission, law, policy, and science.

**Table 1. Proposed coursework for *Certificate in Military Land Sustainability* by thematic areas, 2011.**

Course	Title/Description	SCH
<i>Land Management</i>		
New Fall	<b><i>Sustainable Military Land Management</i></b> (WFSC 641) – Course provides an overview of Department of Defense (DoD) lands within a temporal, geographic, and environmental context and perspective. A review of major policies/laws impacting military land use and areas critical to mission sustainment, as well as management strategies important to sustaining installations and ranges will be presented. Students will acquire a basic understanding of natural resource management and military land sustainability through the review of (1) military land uses and training/test requirements, (2) major policies/laws impacting training/testing activities on DoD lands, (3) planning approaches to Military Land Sustainability, and (4) sample case studies.	3
New Spring	<b><i>Field Military Land Management</i></b> (WFSC 642) – Course provides an overview of current land management practices and challenges on military lands through field visits or “range tours” of select military installations. During the week-long field trip, students will visit various installations/services. Focus of field site visits will include issues that are natural resource and wildlife-related.	1
New Fall	<b><i>Geospatial Technology in Military Land Management</i></b> (WFSC 643) – Course reviews tools for visualizing, creating, managing, and analyzing geographic data on military lands and outside areas critical to mission sustainment. Students will become familiar and proficient in use of GIS software in military-related land management scenarios.	3
	<b><i>Land Management Elective</i></b> – Select from existing courses, e.g., Animal Ecology (WFSC 613), Ecohydrology (ESSM 635), Rangeland Resource Management (ESSM 610), Range and Forest Watershed Management (ESSM 636), Restoration Ecology (ESSM 630), Terrestrial Ecosystems and Global Change (ESSM 624), Wildlife Habitat Management (WFSC 636).	3
<i>Policy and Culture</i>		
New Spring	<b><i>Natural Resource Policy Seminar</i></b> (WFSC 681) – Graduate seminar reviewing major natural resource laws and policies that impact land uses (in general) and management of wildlife populations (specific). Seminar will provide an overview of natural resource laws and policies followed by student presentation of case studies.	1
New Spring	<b><i>Cultural Competency and Conflict Resolution Seminar</i></b> (WFSC 681) – Graduate seminar reviewing basic principles in working with diverse communities at local and regional scales. Seminar will begin with background information followed by student presentations of case studies related to military land use conflicts.	1
	<b><i>Policy and Culture Elective</i></b> – Select from existing courses, e.g., Ecosystems and Markets (ESSM 670), Ecology and Society (WFSC 630), Forest Policy (ESSM 406), International Sustainable Community Development (ESSM 675), Leadership and Management of Environmental NGOs (ESSM 676), etc.	3
<b>Total</b>		<b>15</b>

**Table 2. List of prescribed course electives for *Certificate in Military Land Sustainability, 2011.***

Course	Title/Description	SCH
ESSM 610	<i>Rangeland Resource Management.</i> Basic concepts and theories of rangeland resource management; trends in range classification, grazing management and improvement practices.	3
ESSM 630	<i>Restoration Ecology.</i> Review and discuss fundamental concepts, current literature, and contemporary topics relating to ecological restoration. This includes the theoretical development of restoration ecology and its application. The relationship with conservation biology will be explored. The goal is to inform, exchange views, and develop critical thinking skills through case studies.	3
ESSM 635	<i>Ecohydrology.</i> This course will provide a framework for understanding how plants and animals affect the water cycle; the water cycle in all of its aspects will be examined and explored with the idea of understanding how changes in land cover may influence the water cycle; implications for both upland and riparian systems will be examined.	3
ESSM 636	<i>Range and Forest Watershed Management.</i> Management of range and forest water-sheds; influence of range and forest practices on runoff, interception, infiltration, erosion and water quality; current literature and research advances.	3
ESSM 651	<i>Geographic Information Systems.</i> Design, planning and implementation of geographic information systems; computer hardware and software evaluation; practical experience in data entry, analysis and update of spatial and characteristic data; linkages of GIS and artificial intelligence; use of maps and remotely sensed data as data inputs.	3
ESSM 652	<i>Advanced Topics in Geographic Information Systems.</i> Advanced GIS topics with a focus on modeling actual GIS applications including relational and database theory, design and implementation and its connection to GIS; surface analysis with digital terrain models; and an introduction to spatial statistics.	3
ESSM 660	<i>Landscape Analysis and Modeling.</i> Introduction to quantitative methods of landscape analysis and modeling for applications in natural resource conservation and management; quantification of landscape composition and configuration; spatial statistical methods for characterizing landscape pattern; methods for hypothesis testing with spatial data; landscape modeling approaches and applications; current literature and software.	3
ESSM 670	<i>Ecosystems and Markets.</i> Concepts and analysis of supply chains for natural resource commodities and ecosystem services. Exploration of the economic uses of goods and services from ecosystems.	3
ESSM 675	<i>International Sustainable Community Development.</i> Depicting global trends, paradigms and a comparative framework on sustainable community development; visioning, design, planning and developmental processes; leadership and management skills; marketing and promotion of sustainability concepts and practices; efficacies, indicators, analytic methods and case analyses; platforms for international cooperation; opportunities and careers in pertinent fields.	3
ESSM 676	<i>Leadership, Development and Management of Environmental NGO.</i> Trends	3

	and increasing power of NGOs in environment and sustainable development; understanding of the organizational structures, functions, planning and management processes of environmental NGOs; technical skills and leadership qualities for careers with environmental NGOs.	
WFSC 604	<i>Ecological Modeling</i> . Philosophical basis, theoretical framework, and practical application of systems analysis and simulation within the context of ecology and natural resource management; emphasis placed on development, evaluation and use of simulation models by students.	3
WFSC 613	<i>Animal Ecology</i> . Concepts of animal ecology which emerge at various levels or organization; the ecosystem, the community, the population and the individual; laboratories emphasis on the quantitative analysis of field data and the simulation of population dynamics.	3
WFSC 618	<i>Wildlife Study Design and Analysis</i> . Students will be exposed to fundamental and advanced aspects of study design applicable to terrestrial animals; analysis and review of the scientific literature related to study design; and the development of study design for written and oral presentations.	3
WFSC 622	<i>Behavioral Ecology</i> . Integration of animal behavior with ecological and evolutionary principles; includes mating, predation, foraging ecology, social behavior, game theory and behavioral genetics; emphasis on quantification of behavior and strategy modeling.	3
WFSC 624	<i>Dynamics of Populations</i> . Principles, models and methods for analysis of population dynamics; analysis of contemporary research emphasizing theory and its uses in evaluation and management of animal populations. Laboratory emphasizes mathematical, statistical and computer modeling of population phenomena.	4
WFSC 630	<i>Ecology and Society</i> . Students study and compare human and natural ecosystems using diversity, interrelations, cycles, and energy as the conceptual organization; central themes of the course are sustainability, stewardship & science.	3
WFSC 636	<i>Wildlife Habitat Management</i> . Designed to acquaint the student with major land use practices on lands that produce wildlife, how these influences wildlife production and alterations or manipulations of habitat used to achieve specific wildlife management goals.	3



COLLEGE OF AGRICULTURE  
AND LIFE SCIENCES  
INSTITUTE OF RENEWABLE  
NATURAL RESOURCES

August 1, 2011

Dear Curriculum Committee:

This is to offer my support for the proposed *Certificate in Military Sustainability*. From my perspective, the program is both innovative and unique in supporting the mission of the Department of Defense (DoD) in three distinct ways.

First, the project is timely and relevant in addressing a need to better coordinate land use planning at larger, regional scales and through an integrated approach that includes natural resource management, policy, economics, military readiness, and human dimension. The interdisciplinary approach of the graduate certificate will help develop a well-rounded graduate student equipped to address and solve complex land use issues our nation, including our military installations. Furthermore, this certificate program will complement several of our graduate programs in providing military centered perspectives to targeted graduate student.

Second, the project supports our men and women in uniform to pursue graduate level training in natural resources. This aspect of the graduate program is unique, and would likely be extremely popular with our military personnel due to the flexibility in the program's online course delivery. The integration of site visits and field/research experiences of student on military installations is an added bonus to the student's experience. The program also will help build a larger network of military land managers that look to Texas A&M University and the Institute of Renewable Natural Resources (IRNR) as experts in military land management. The Master's certificate will enhance and support military sustainability efforts conducted within DoD and the mission of Texas A&M to "prepare students to assume roles in leadership, responsibility, and service to society".

In closing, I believe the proposed certificate program will serve as a model to follow by supporting the university's graduate programs in natural resources. The Texas A&M IRNR is committed to the program's success and will provide website support, assistance in the delivery of classroom instruction, and the time commitment of our Associate Director in coordinating the program. I hope the recommendation committee supports this application.

Sincerely,

Neal Wilkins, Director  
Texas A&M Institute of Renewable Natural Resources

1500 Research Parkway, Suite 110  
2260 TAMU  
College Station, TX 77843-2260  
Tel. 979.862.3199 Fax. 979.845.0662  
<http://irnr.tamu.edu>



COLLEGE OF AGRICULTURE  
AND LIFE SCIENCES

DEPARTMENT OF WILDLIFE AND FISHERIES SCIENCES  
210 NAGLE HALL

July 13, 2011

Dear Selection Committee:

This letter is in support of the proposed graduate *Certificate in Military Sustainability*. The Department of Wildlife and Fisheries Sciences (WFSC) supports establishing the online graduate certificate and offering associated new coursework for several reasons.

First, the graduate certificate will serve to *support active and former military students* wishing to pursue a graduate degree in natural resources. The online nature of the *Certificate in Military Sustainability* offers the maximum flexibility to active military who wish to pursue graduate studies at Texas A&M University. Our department currently offers several online or distance courses that can be applied as electives in the proposed graduate certificate. In addition, one of our faculty members will serve as program coordinator, and develop and offer core courses to certificate program. Second, the project would *support the long-term sustainability of military installations* through the enhanced training of natural resource professionals working on DoD lands. Advanced graduate degrees that integrate land management, policy, regional planning, and conflict resolution can provide the education and experience needed by these professionals. Finally, the graduate degree program would allow graduate students opportunities to *work with local military installation personnel* to jointly solve natural resource and environmental challenges. Research on military lands can provide timely and critical information needed to better manage installation assets. Several of our faculty currently work on military lands throughout the state and country.

For these reasons, I support the proposed graduate certificate program. Our department is committed in providing support to these prospective graduate students (e.g., advising, coursework offerings, etc.) to ensure the success of the program. Thanks you for your consideration of this proposal.

Sincerely,

John Carey  
Interim Department Head  
And Professor



COLLEGE OF AGRICULTURE  
AND LIFE SCIENCES

DEPARTMENT OF ECOSYSTEM  
SCIENCE AND MANAGEMENT

July 20, 2011

Dear Selection Committee:

This letter is in support of the establishment of the graduate *Certificate in Military Sustainability* at Texas A&M University that will serve to complement our current online degrees. The Department of Ecosystem Science and Management (ESSM) supports establishing the online graduate certificate for several reasons.

The proposed graduate certificate is unique in targeting active or former military wishing to pursue a graduate degree in natural resource management. We currently offer several courses in ESSM that are distance-based. These courses in conjunction with the online nature of the *Certificate in Military Sustainability* will offer increased flexibility to the military community. We also offer courses that are land management focused. These courses (many of which are offered online) would support the Land Management theme of the graduate certificate, and would provide the enhanced training of natural resource professionals that wish to pursue careers working on military lands. Finally, the graduate degree program would allow graduate students opportunities to work with local military installation personnel to jointly solve natural resource and environmental challenges. Several of our faculty are currently working, for example, at Fort Hood on various natural resource projects ranging from land restoration to water conservation. These faculty can serve to mentor students as committee members or in identifying research projects that likely would be of interest to target students.

For these reasons, I support the proposed graduate certificate program. From my perspective a multi-disciplinary approach will be extremely valuable in promoting military readiness through natural resource management. Our department is committed to providing support to these prospective students (e.g., advising, coursework offerings, etc.) to ensure the success of the program. Thank you for your consideration of the proposal.

Sincerely,

Steven G. Whisenant  
Professor and Department Head

SGW/cw

305 Horticulture/Forest Science Building  
2138 TAMU  
College Station, Texas 77843

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<http://essm.tamu.edu>

## DIVISION OF STUDENT AFFAIRS

Office of the Vice President for Student Affairs



August 4, 2011

Board of Regents  
 Texas A&M System  
 P.O. Box 15812  
 College Station, TX 77841

Dear Members of the Board of Regents:

I strongly support the graduate *Certificate in Military Sustainability* being submitted by the faculty and staff at the Institute of Renewable Natural Resources (IRNR). The proposed graduate certificate program would be offered by The Departments of Wildlife and Fisheries Sciences (WFSC) and Ecosystem Science and Management (ESSM). IRNR is coordinating the joint graduate degree program between the departments.

The establishment of an online *Certificate in Military Sustainability* provides active duty military personnel, veterans, and other prospective graduates with unique career opportunities in environmental and natural resources with the military. The proposed degree program would serve an important national need and be strongly supported by Texas A&M University (TAMU) as a top academic and research institution. The proposed interdisciplinary approach would allow students to develop critical thinking skills, expertise, and proficiency in addressing complex environmental issues and thereby facilitate resolution in the area of regional land use planning, economics, and policy analysis and development. By offering these skills in a certificate it will prepare Graduate students with flexible course options, while providing them a firm understanding of the unique challenges in military land management. As a former United States Marine Corps (USMC) Commander, I was responsible for sustainment of military installations and ranges necessary in the training and "readiness" of our armed forces. A common challenge in military sustainability is the complexity of land uses in and around military installations. Natural resource professionals need a diverse set of skills to address these challenges. In my opinion, the proposed graduate certificate program would provide students with the training and field experiences needed in the management of military lands.

In closing, the project team has full support of the Division of Student Affairs in targeting active duty military and veterans interested in this program. Texas A&M has a proud and long-standing tradition of association with our nation's military. The *Certificate in Military Sustainability* would serve to continue this tradition.

Sincerely,

A handwritten signature in black ink, appearing to read 'Joseph F. Weber'.

LtGen Joseph F. Weber, USMC (Ref.)  
 Vice President for Student Affairs

cc: Dr. R. Bowen Loffin  
 Dr. Karan Watson  
 Mr. Joe Pettibon

117 Koldus Student Services Building  
 1256 TAMU  
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