

**Graduate Council Report**

**December 1, 2011**

**Special Consideration Item:**

Graduate Council approved the College of Agriculture and Life Sciences, Department of Soil and Crop Sciences proposal for a Graduate Certificate in Regulatory Science in Food Systems.



**Program Funding**

Has program funding been finalized at the department or college level? Yes X No   
If no, explain or attach budget: \_\_\_\_\_  
Will new costs for the first five years of the program be under \$2 million? Yes X No   
If new costs exceed \$2 million, coordinating board approval is required.

**Submitted by (Contact Person):**

Tim Herrman tjh@otsc.tamu.edu  
\_\_\_\_\_  
Name Email  
Professor, Department of Soil & Crop Sciences  
State Chemist and Director, Office of the Texas State Chemist (979) 845-1121  
\_\_\_\_\_  
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.*

David D. Baltensperger 11/3/11  
Signature, Department Head Date  
Dr. David D. Baltensperger  
Department of Soil & Crop Sciences

Timothy J. Herrman 11/3/11  
Signature, Program Director Date  
Dr. Timothy J. Herrman  
Department of Soil & Crop Sciences

Ward Winbleed 11/16/11  
Chair, College Review Committee Date

Ward Winbleed 11/16/11  
Dean of College Date

\_\_\_\_\_  
Chair, College Review Committee Date

Mark J. Zoran DEC 1 2011  
Chair, 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
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*):

### Regulatory Science in Food Systems Graduate Certificate

3. **Proposed CIP Code:** 01 .1102 .00 05 Agronomy and Crop Science
4. **Brief Program Description** – Describe the program and the educational objectives:  
The curriculum, which is developed as a joint effort between university faculty, the U.S. Food and Drug Administration (FDA), and representatives from the food and feed industries, is designed to address the need for regulatory science education and prepares professionals to meet the challenges of the 21<sup>st</sup> century food and feed supply chain. Upon completion of the program, students will have the knowledge and skills to:
  - Interpret and implement the U.S. and international laws, regulations, and standards that govern the production, processing, and distribution of products in the food and feed supply chain
  - Assess the significance and impact of existing and emerging regulations and standards on business operations, food protection, and the environment
  - Apply a science-based approach to risk management, and be part of a risk management team
  - Establish practical strategies for compliance and reporting
  - Develop and implement Good Laboratory Practices
  - Lead complex regulatory reviews
  - Communicate the benefits of regulatory decision-making and compliance to management and consumers
  - Apply essential knowledge and skills to help companies navigate an increasingly complex regulatory environment

Number of Semester Credit Hours Required: **12 semester credit hours**

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*):

**Department of Soil & Crop Sciences within the College of Agriculture & Life Sciences**

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

**Spring 2013**

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

**Name: Tim Herrman**

**Title: Professor, Department of Soil & Crop Sciences**

**State Chemist and Director, Office of the Texas State Chemist**

**E-mail: [tjh@otsc.tamu.edu](mailto:tjh@otsc.tamu.edu)**

**Phone: (979) 845-1121**

## 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.

Professionals with an understanding of regulatory science play an important role in the daily business conducted by government and industry employers. In March 2010, Margaret Hamburg, Commissioner of Food and Drugs at FDA stated that the agency seeks to advance regulatory science by implementing a “culture of and capacity for continuous scientific learning and professional development of our scientific staff.” The FDA’s FY 2011 budget provides funding for the “Transforming Food Safety Initiative” to hire additional staff to “expand programs that protect America’s food supply.” Similarly, industry employers seek to recruit and retain managerial-level employees who can apply policy-related and legal issues to business operations. Demand for agricultural and food scientists in the U.S. is projected to increase as much as 16% through 2018 (BLS, 2010). In 2008, the median annual wage for food scientists and technologists was \$64,610. Current opportunities for employment in this field are posted on sites such as American Society for Quality (AQS), BlueSkySearch, Regulatory Affairs Professionals Society (RAPS), USAJobs, American Feed Industry Association (AFIA), and Feed Industry.org. For example:

RAPS (<http://regulatorycareers.raps.org/jobs#>) listed the following on September 28, 2011:

4 position announcements in the U.S. for Regulatory Affairs Specialist, Regulatory Affairs Manager, Director of Regulatory Affairs, and Quality Specialist; requiring 4-year degree & experience.

BlueSkySearch (<http://www.blueskysearch.com/Default.htm>) listed the following on September 28, 2011:

4 position announcement in the U.S. for Sanitation Manager, Export Produce Trader, Food Safety Coordinator, and Quality Assurance Manager; requiring 4-year degree & experience.

AFIA (<http://careers.afia.org/jobs>) listed the following on September 28, 2011:

3 position announcements in the U.S. for Regional Operations Manager, R&D Center Manager, Site Quality & Food Safety Manager, and Technical Regulatory Manager

Feed Industry (<http://www.feedindustry.org/jobs/>) listed the following on September 28, 2011:

12 position announcements in the U.S. and abroad for Feed Mill Supervisor/Manager, Vice General Manager, Feed Ingredient Analysis & Purchasing Manager, Production Officer/QA Officer, and Quality Control Coordinator

Industry employers rely on managers to ensure products are safe, legal and market compliant. Government agencies rely on professionals to register products, conduct inspections, collect and analyze samples, enforce regulatory restrictions, and respond during public health emergencies. The growing need for knowledge and skills in the emerging field of Regulatory Science ensures the future availability of employment opportunities in industry and government agencies. Potential career paths and opportunities for advancement that may be pursued by certificate awardees are listed below.

Career	Occupational Code (O*net)
<a href="#">Agricultural &amp; Food Science Technicians</a>	19-4011.00
<a href="#">Agricultural Inspectors</a>	45-2011.00
<a href="#">Compliance Manager</a>	11-9199.02
<a href="#">Customs Broker</a>	13-1199.03
<a href="#">General and Operations Manager</a>	11-1021.00
<a href="#">Logistics Manager</a>	11-3071.03
<a href="#">Production &amp; Operations Supervisor</a>	51-1011.00
<a href="#">Purchasing Manager</a>	11-3061.00
<a href="#">Regulatory Affairs Manager</a>	11-9199.01

An established need exists for education in the risk analysis disciplines (National Research Council) and Texas A&M University is in a unique position to serve this academic market. Faculty possess a longstanding relationship with FDA on a local and national level and their participation in national and international groups such as Association of American Feed Control Officials (AAFCO), Association of Food and Drug Officials (AFDO), and CODEX alimentarius provide a base of support for further development of the curriculum, student recruitment and the employment of former students. Faculty members possess experience implementing the subject matter offered in this curriculum.

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

The Regulatory Science in Food Systems Graduate Certificate is designed to attract outstanding students interested in professional careers in food and feed agencies and industries. The Certificate is available to current Texas A&M University graduate students and current Texas A&M University undergraduate students of senior level status (with 3.0 GPA and higher). Applicants are likely to be employed, or seek employment, as facility managers, compliance managers, quality assurance managers, agricultural inspectors, food safety compliance inspectors, food safety specialists, quality assurance food science specialists, or trainers.

Currently, courses in Regulatory Science at Texas A&M University attract industry professionals and agency personnel from around the world. The online Feed Industry HACCP continuing education courses offered by the Office of the Texas State Chemist and the Department of Soil and Crop Sciences have attracted 72 domestic and 18 international participants (representing 23 states and 11 nations, respectively) who are employed as managers and executives at food and feed processing facilities. This successful program attracts participants using limited industry communication, word-of-mouth and Web advertising. A survey conducted at the 2011 Association of American Feed Control Officials (AAFCO) annual meeting indicated that 70% of industry and regulatory representatives surveyed would consider enrolling in a graduate level regulatory science degree offered at a distance. Formal advertising of the Regulatory Science in Food Systems Graduate Certificate is likely to attract a greater number of students from a similar demographic.

**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	5	10	11	12	13
FTSE	N/A	N/A	N/A	N/A	N/A

**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	12
Prescribed Electives	0
Free Electives	0
Other ( <i>Specify, e.g., internships, clinical work</i> )	0
TOTAL	12

- 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.)*

Students choose any four of the five courses listed below. Regulatory Science in Food Systems Graduate Certificate courses are exempt from the minimum number of students required for on-campus course section delivery. (See Course Descriptions Appendix A)

Prefix and Number	Required Courses	SCH
SCSC 689 (proposed as SCSC 634)	Regulatory Science: Principles & Practices in Food Systems	3
SCSC/AGEC 689 (proposed as SCSC 635)	Comparative Global Standards in Food Systems	3
SCSC 689 (proposed as SCSC 636)	Regulatory Science Methodology in Food Systems	3
SCSC/VTMI 689 (proposed as SCSC/VTMI 629)	Laboratory Quality Systems	3
AGEC 689	Managerial Economics for Regulatory Science	3

NOTE: Proposed courses are pending approval of submitted forms.

Prefix and Number	Prescribed Elective Courses	SCH
N/A	No prescribed electives	0

Courses are available according to the following schedule.

Fall	Spring	Summer
Comparative Global Standards in Food Systems	Regulatory Science: Principles & Practices in Food Systems	Laboratory Quality Systems
Regulatory Science Methodology in Food Systems	Managerial Economics for Regulatory Science	

**Course Delivery:** All courses are delivered entirely at a distance. Individual instructors work with an Instructional Designer to select tools and methods appropriate for each course. Courses primarily consist of assigned readings, audio-over-PowerPoint presentations, individual and group assignments, discussion boards, conference calls, quizzes and exams. Course content, communication tools and assessment tools are housed within the university's secure learning management system (LMS).

**Technical Requirements:** The following technical requirements are required for student participation in the program:

- A computer that is less than 4 years old
- High-speed internet connection (cable/DSL or better) & updated browser
- Office software and common plug-ins (e.g., Adobe Reader, Flash Player, etc.)
- Microphone and speakers, CD/DVD player/burner



- 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. (See Faculty Profiles Appendix B)

<b>Name of <u>Core</u> Faculty and Faculty Rank</b>	<b>Highest Degree &amp; Awarding Institution</b>	<b>Courses Assigned in Program</b>	<b>% Time Assigned To Program</b>
Herrman, Timothy*	Ph.D. (Plant Science), University of Idaho	Regulatory Science: Principles & Practices in Food Systems; Regulatory Science Methodology in Food Systems; Comparative Global Standards in Food Systems	N/A

<b>Name of <u>Support</u> Faculty &amp; Rank</b>	<b>Highest Degree &amp; Awarding Institution</b>	<b>Courses Assigned in Program</b>	<b>% Time Assigned To Program</b>
Dai, Susie Research Assistant Professor	Ph.D. (Chemistry) Duke University	Laboratory Quality Systems	N/A
Salin, Victoria Associate Professor	Ph.D. (Agricultural Economics), Purdue University	Managerial Economics for Regulatory Science; Comparative Global Standards in Food Systems	

- 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.

**Recruiting Efforts:**

On-campus recruiting efforts include the distribution of materials to faculty and graduate advisors in related fields. In addition, potential students are made aware of the program through:

1. Student association announcements;
2. Direct electronic mailings of brochures announcing and describing the program;
3. Direct communications, i.e., word of mouth, between faculty with national and international affiliations; and
4. Social media.

Key industry and regulatory agencies will also be targeted for the promotion of the Regulatory Science in Food Systems Graduate Certificate. Marketing materials will be distributed at national and international regulatory conferences and advertised in printed and online publications. The program Web site will provide complete instructions to apply, register for courses, and obtain the certificate. Students enrolled in distance education graduate programs will also be made aware of course offerings.

## Graduate Admissions Requirements:

Graduate admission at Texas A&M University is based upon the entire record of the applicant and availability of departmental resources. At a minimum, the university requires that each applicant hold a four-year baccalaureate degree or higher from a college or university of recognized standing in a related field such as: agriculture; biological or life sciences; physical sciences; food science; biostatistics or statistics; mathematics; chemistry; engineering; animal science; veterinary science; regulatory science; or public health.

The Regulatory Science in Food Systems Graduate Certificate is available to current Texas A&M University graduate students and current Texas A&M University undergraduate students of senior level status (with 3.0 GPA and higher) as well as full-time professionals. A majority of the students pursuing the Regulatory Science in Food Systems Graduate Certificate will be distance students enrolled under the [Postbaccalaureate Non-degree Status \(G6\)](#) (2011-2012 TAMU Graduate Catalog). Distance students pursuing the Certificate are exempt from TAMU, COALS, or Department residence requirements. General admission requirements for G6 students are outlined below. Details are posted by the [Office of Admissions](#). To apply, students must submit:

1. **Texas A&M University Application:** The ApplyTexas (<http://applytexas.org>) online application form is required for anyone wishing to apply to graduate school at Texas A&M University (6003).
2. **Application Fee:** A nonrefundable application fee of \$50 for U.S. citizens, permanent residents, and applicants for U.S. permanent residency or \$90 for international applicants, is required to process an application.
3. **Official Transcripts:** In order to qualify for admission into a Graduate non-degree (G6) program of study, an official transcript showing completion of a Bachelor's degree is required. For Bachelor's degrees completed outside the United States, a separate statement of award of degree or diploma is also required.
4. **Test of English as a Foreign Language (TOEFEL):** Applicants whose native language is not English are required to submit proof of English proficiency, which is satisfied by:
  - a. a minimum TOEFL score of:
    - i. 550 for paper-based testing (p-BT),
    - ii. 80 internet-based testing (i-BT), or
  - b. a minimum IELTS score of 6.0 overall band, or completing all years of a Bachelor's degree or higher at a U.S. accredited university.
5. **Proof of vaccination against bacterial meningitis.**

Details regarding program administration, including acceptance of students into the program, departmental review of student performance, and the procedures for issuing certificates are described in Appendix C.

## Uniform Recruitment and Retention Strategy:

The Certificate is likely to attract life-long learners from around the world who have established professional careers in the field. These non-traditional

students will be recruited in tandem with on-campus students, including those from underrepresented groups. Each group receives recruiting materials designed to suit the audience. For example, the Texas A&M University chapter of Minorities in the Agriculture, Natural Resources, and Related Sciences ([MANNRS](#)) will receive course announcements and information about the Certificate program at meetings and via the [chapter Facebook page](#). Life-long learners who have participated in previous course offerings receive direct email announcements. New students, both domestic and international, will be reached through a wide variety of online and print news releases and advertisements in association publications such as [Feedstuffs](#) weekly agribusiness newsletter. Once admitted to the program, students receive individual support to ensure completion of the program.

- 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. (See Appendix D)
- 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.

The Certificate courses are delivered online. No additional facilities or equipment are required for the support of this program. The Department of Soil and Crop Sciences Graduate Program provides administrative support as well as facilities for lecture recording and editing. The Office of the Texas State Chemist also provides access to instructional support staff (.5 FTE) funded by a Texas Feed Safety grant sponsored by Federal Food and Drug Administration. Instructional support includes development and posting of online course materials in the Texas A&M University learning management system, assistance to develop and utilize online assignment, assessment, and communication tools; and instructor support during course delivery.

To facilitate the process of capturing and editing of audio/video-over-PowerPoint, instructors have access to screen recording/editing software (e.g., [Techsmith Camtasia](#)), a semi-professional quality microphone, digital camcorder, computer with upgraded sound and/or video cards, and file storage space. Instructors have the option of recording lectures in their office using borrowed equipment or utilizing the recording room in the Department of Soil & Crop Sciences Heep Center.

To capture, scan or modify images, instructors have access to a digital camera, scanner, and assistance to modify images with photo editing software such as Adobe Photoshop.

All participating instructors are known to have access to desktop computers that are less than four years old, with common office software and plug-ins, CD/DVD player/burner, a high-speed (cable or DSL) Internet connection, an up-to-date Web browser, microphone and/or video camera (built-in or external), and free Web-conferencing software (e.g., Centra). Students are required to provide similar equipment and connectivity to participate from off-campus locations.

Technical support for online courses is also provided through Instructional Technology Services (ITS), which provides Help Desk support for students, faculty and staff involved in distance education.

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

Due to the newness of this topic, no accrediting body currently exists. The Program Director will continue to explore appropriate paths for accreditation.

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

Curriculum and instruction quality are based on the [Southern Regional Education Board's Principles of Good Practice for Academic Degree and Certificate Programs and Credit Courses Offered Electronically](#). To evaluate quality and effectiveness, the Department of Soil and Crop Sciences follows the required assessment procedures at Texas A&M University, which includes student evaluations conducted via the Personalized Instructor/Course Appraisal ([PICA](#)) system. Academic progress is reviewed at the end of each semester and the professional advancement of learners who have earned the Certificate is monitored annually.

The instructor of record is solely responsible for teaching, monitoring, and evaluating all course activities and assigning grades. Distance learners have the same redress opportunities as on-campus graduate students, i.e., availability of Associate Heads for Academic Affairs in any department delivering an on-line course, Department Heads, and the Ombudsperson for the Office of Graduate Studies.

### 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.

No additional funding is required to support this program and no assistantships or fellowships are available. As part of the Texas Feed Safety Cooperative Agreement (CAP), which is a five year (2010-2015) project funded by the Food and Drug Administration (FDA), the Office of the Texas State Chemist is able to provide funding for an instructional designer who will help faculty develop materials and provide technology support. Dr. Tim Herrman, Professor of Grain Science in the Department of Soil & Crop Sciences is the Program Director for the Certificate and Principle Investigator for the Texas Feed Safety CAP.

<b>Five-Year Costs</b>		<b>Five-Year Funding</b>	
Personnel <sup>1</sup>	\$0	Reallocated Funds	\$0
Facilities and Equipment	\$0	Anticipated New Formula Funding <sup>3</sup>	\$0
Library, Supplies, & Materials	\$0	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>

- 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).
- Specify other costs here (e.g., administrative costs, travel).
- 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.
- 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).*

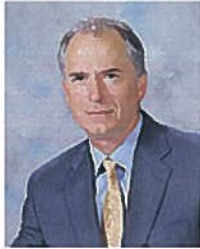
\_\_\_\_\_

Board of Regents (Designee) Date

**APPENDIX A: Course Descriptions**

- AGEC 689. Managerial Economics for Regulatory Science.** Economic and business frameworks within which the regulations and standards governing the production of food operate; economic theories of the firm and fundamental calculations in finance as the foundation for cost/benefit analyses of existing and proposed regulations; applications to U.S. and global regulations and standards.  
Prerequisites: None  
Instructor: Dr. Victoria Salin
- SCSC 689. Regulatory Science: Principles & Practices in Food Systems.** Regulatory tools, standards and approaches in production, processing, and distribution of agricultural goods; development and implementation of regulations; interdependence of federal and state agencies; use of risk analysis.  
Prerequisites: None  
Instructor: Dr. Tim Herrman
- SCSC/AGEC 689. Comparative Global Standards in Food Systems.** Laws, regulations and standards governing the production, distribution, processing, and marketing of food across regions of the world; international standard setting bodies and risk assessment committees; regulatory equivalency and harmonization; product approval procedures; cost/benefits of global standards and trade agreements.  
Prerequisites: None  
Instructors: Dr. Tim Herrman & Dr. Vicky Salin
- SCSC 689. Regulatory Science Methodology in Food Systems.** Risk management methodology including investigation of food and feed firms, conducting internal compliance audits; sample collection, chain-of-custody, trace-back and trace-forward, recalls, label review, data interpretation, risk ranking, resource prioritization, incident command and rapid response.  
Prerequisite: SCSC 689: Regulatory Science: Principles & Practices in Food Systems  
Instructor: Dr. Tim Herrman
- SCSC/VTMI 689. Laboratory Quality Systems.** Quality systems and method development used within a laboratory; ensuring the integrity of procedures used in lab processes, chain of custody, information management, and international laboratory standards; regulatory requirements for laboratory operation; bio-security precautions; laboratory management.  
Prerequisites: None  
Instructors: Dr. Susie Dai & Dr. Tim Herrman



**APPENDIX B: Faculty Profiles****Dr. Tim Herrman**

Professor, Grain Science, Department of Soil & Crop Sciences  
State Chemist and Director, Office of the Texas State Chemist  
PhD (Plant Science), University of Idaho  
MS (Plant Path) (Forest Resources), University of Idaho  
BS (Agronomy) Washington State University

Dr. Tim Herrman serves as the state chemist and director of the Office of the Texas State Chemist. The Office includes two units, the Texas Feed and Fertilizer Control Service and the Agricultural Analytical Service. The Texas Feed and Fertilizer Control Service is the state agency that regulates the distribution of 20 million tons of feed and fertilizer in Texas by over 5000 facilities and guarantors located in Texas, the United States, and abroad. The Agricultural Analytical Service supports regulatory activities of the Office of the Texas State Chemist, Texas A&M research faculty, the nation's Food Emergency Response Network and Food and Drug Administration through chemical and microbiological analyses. Dr. Herrman is a professor in the Department of Soil and Crop Sciences and leads a research and education program in regulatory science.

Dr. Herrman teaches SCSC 689: Regulatory Science: Principles & Practices in Food Systems, SCSC 689: Regulatory Science Methodology in Food Systems, SCSC 689: Comparative Global Standards in Food Systems; and SCSC 689: Laboratory Quality Systems

**Dr. Victoria Salin**

Associate Professor, Department of Agricultural Economics, Texas A&M University  
PhD (Agricultural Economics), Purdue University  
MA (Government and Foreign Affairs), University of Virginia  
BA (Political Science and History), Miami University

Victoria Salin is an Associate Professor in the Department of Agricultural Economics at Texas A&M University specializing in agribusiness management and finance. Dr. Salin is also the chief financial officer of AFCERC and manages the budget, staffing, and day-to-day operations of the Center. She is an associate professor of agricultural economics and leads AFCERC research and outreach projects relating to food safety, traceability, and strategic management. She is a member of the Scientific Advisory Council of the World Food Logistics Organization ([www.wflo.org](http://www.wflo.org)) and serves on the Board of Directors of the State of Texas Agricultural Finance Authority. Her research specialty is in applications of real options theory to agribusiness investments, currently analyzing food safety risks and risk-shifting contracts. Recent research projects include microfinance and credit rationing, and risk exposures of lending institutions.

Dr. Salin teaches AGECE 689: Managerial Economics for Regulatory Science and SCSC 689: Comparative Global Standards in Food Systems

**APPENDIX B: Faculty Profiles, continued**

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**Dr. Susie Dai**

Research Assistant Professor, Department of Veterinary Pathobiology  
PhD (Chemistry) Duke University  
BS (Chemistry) Fudan University, Changhai, China

Dr. Dai's interests focus on several aspects: 1) Proteomics and interactomics in cancer and bioenergy. 2) Protein structure dynamics and structure-function relationship study with a focus in nuclear receptor and cellulase enzymes. 3) Biomonitoring programs which include analyzing veterinary drugs, mycotoxins, etc., in feed and food. We utilize a variety of techniques including shotgun proteomics, hydrogen deuterium exchange mass spectrometry and mass-spec based multiple target analysis. The major goals of the lab are: 1) Establish systems biology approaches to characterize and elucidate protein-protein interaction and mechanistic study of protein functions with the ultimate goal for novel therapies in cancer and breakthroughs for bioenergy production. 2) Develop methods for food and feed safety monitoring programs in a high throughput, multiple residue based fashion.

Dr. Dai teaches VTMI 689: Laboratory Quality Systems



## APPENDIX C: Regulatory Science in Food Systems Graduate Certificate Administrative Framework

**Program Structure:** The Department of Soil and Crop Sciences Graduate Program awards the certificate and provides administrative support. The Program Director, Dr. Tim Herrman, is responsible for the daily management of the program. The Department of Soil & Crop Sciences, in cooperation with the Department of Agricultural Economics, and the Department of Veterinary Pathobiology, are responsible for the academic offerings of the certificate program. Letters of support are available in Appendix E.

**Admissions:** Acceptance to the program is at the discretion of the Program Director. Admission to the program is based upon the minimum admissions guidelines below. Professional experience in the food & feed industry or agency may also be taken into consideration. The department reserves the right to limit the number of applicants admitted based on the resources available for the program.

<b>Minimum Admissions Guidelines</b>	
Overall GPA in last 60 hours	≥3.0
Degree in related field	B.S.
GRE Score (required if GPA is <3.0 overall in last 60 hours)	≥1000 (combined verbal & quantitative)

**Application Deadlines:** Applications received by the following deadlines will be considered by the review committee.

<b>To begin coursework in:</b>	<b>U.S. Students Apply by:</b>	<b>International Students Apply by:</b>
Fall ( <i>classes start on or about Aug. 29</i> )	July 5	February 15
Spring ( <i>classes start on or about Jan. 17</i> )	December 15	July 1 (prior year)
Summer ( <i>classes start on or about May 29</i> )	April 5	November 15 (prior year)

**Admission Process:** Current Texas A&M University students may complete the Certificate while pursuing a degree. Full-time professionals may complete the Certificate as a stand-alone credential.

### Current Student Application

1. Complete the Certificate Program Application by the semester, to include:
  - a. Name, address, phone number, email address
  - b. University Identification Number (UIN)

- c. Citizenship
  - d. Grade point average for last 60 hours of Baccalaureate\* degree and GRE test scores (if overall GPA is <3.0)
  - e. Major field of study for Baccalaureate degree
  - f. Completed Regulatory Science coursework (if any) & semester completed
  - g. How the student learned about program
  - h. Signature & date
2. Submit a statement of interest (approximately 500 words) written by the applicant, indicating personal interest and experience in some area of regulatory science
  3. Submit a personal resume to include all education since high school, major and minor fields of study, and any degrees earned, as well as employment history (firm/institution, dates of employment, duties) special skills or capabilities, awards and honors
  4. Wait to be contacted regarding acceptance to the program

\* If accepted, undergraduate students of senior level status must also complete, route, and submit a Petition for an Undergraduate Student to Enroll in classes, currently located at

<http://admissions.tamu.edu/forms/registrarForms/UGpetition.pdf>

### Professional Student Application

1. Submit the Certificate Program Application, statement of interest and personal resume by the semester deadline & wait to be contacted regarding acceptance to the program
2. Complete the [www.applytexas.org](http://www.applytexas.org) application (Texas A&M University code 6003)
3. Pay the non-refundable application Fee (\$50 for U.S. citizens, permanent residents, and applicants for U.S. permanent residency; \$90 for international applicants)
4. Submit official transcripts

**Student Progress:** Student progress is reported at the end of each semester. Students with <3.000 GPR on all coursework will be blocked from registration in subsequent semesters.

**Program Completion:** The following criteria are required for completion of the Certificate.

- At least 12 SCH completed (or pending completion) with  $\geq 3.000$  GPR on all Regulatory Science coursework

- Settlement of all financial and academic obligations to the university
- Submission of notification form, which includes:
  - Name, address, phone number, email address
  - University Identification Number (UIN)
  - Major, minor
  - Academic department
  - Expected graduation date

<b>To Complete Certificate by:</b>	<b>Submit Notification by:</b>
Fall ( <i>grades due Dec. 15</i> )	November 15
Spring ( <i>grades due May 10</i> )	April 10
Summer ( <i>grades due Aug. 9</i> )	July 9

Upon notification, the program coordinator verifies completion of the student’s coursework and GPA. A list of students who have completed the Certificate is sent (with UINs) to the Office of the Registrar for inclusion on the student’s academic transcript.

**Certificate:**

Current students may receive their Regulatory Science in Food Systems Graduate Certificate by mail or at the graduation ceremony for their M.S. or Ph.D. degree. Professional students receive their Regulatory Science in Food Systems Graduate Certificate by mail.

## APPENDIX D: Library Directors Assessment for Proposed Regulatory Science in Food Systems Graduate Certificate

The University Libraries have adequate resources to support this Certificate. The information will be found in a number of areas. Listed below are some of the primary resources that will be useful to support research in this area.

### Indexes to the literature and public policy:

- CAB Abstracts
- Agricola
- LexisNexis Congressional PolicyArchive
- Campus Research
- Thomas
- Business Source Complete
- EconLit
- ABI/Inform Global
- Factiva
- Trade Policy Review
- Business Monitor
- Worldwide Political Science Abstracts

### Online resources

- Federal Register
- FSIS [http://www.fsis.usda.gov/Science/Guidebooks\\_&Methods/index.asp](http://www.fsis.usda.gov/Science/Guidebooks_&Methods/index.asp)
- HACCP information [http://www.fsis.usda.gov/Science/HACCP\\_models/index.asp](http://www.fsis.usda.gov/Science/HACCP_models/index.asp)
- FDA <http://www.fda.gov/Food/default.htm>

### Some of the relevant call number ranges:

LC range		Title count	Growth 9/1/2009 – current
HB 134-147	Economics methodology	1458	134
HD 61	(Industries, land use, labor) Risk in industry. Risk management.	230	61
HD 1401-2210	(Industries, land use, labor) Agriculture	8066	208
HD 9000-9495	(Industries, land use, labor) Agricultural industries	7131	240
HF 1040-1054	(Commerce) Commodities	248	5
HF 2001-6182	(Commerce) Business	42685	2897
HG 1-9999	Finance	34272	2163
KF 1900-1944	(US Law) Food processing industries	7*	0
KF 3875-3879	(US Law) Food law	12*	1

\*Most law is available online.

Other areas of interest will include Federal Government Documents and State Documents, especially Department of Agriculture and Food and Drug Administration.

## APPENDIX D: Library Director's Letter of Support

UNIVERSITY LIBRARIES

Sterling C. Evans Library



November 1, 2011

### MEMORANDUM

**TO:** Dr. Tim Herrman  
Professor, Department of Soil & Crop Sciences

**FROM:** Charles L. Gilreath  
Interim Dean  
University Libraries

A handwritten signature in black ink that reads 'Charles Gilreath'.

**SUBJECT:** Library support for new graduate certificate in Regulatory Science

The University Libraries can support the new proposed graduate certificate in Regulatory Science. The researchers are already being supported by the collection. The new classes proposed will not require additional materials in areas that are not covered by the collection. The Libraries will continue to collect in these areas and enhance the collection as money allows. We support InterLibrary Loan for articles not available in the TAMU Libraries.

5000 TAMU  
College Station, TX 77843-5000  
Tel. 979.845.8111 Fax. 979.845.6238  
[www.library.tamu.edu](http://www.library.tamu.edu)

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## APPENDIX E: Letters of Support

COLLEGE OF VETERINARY MEDICINE  
& BIOMEDICAL SCIENCES

Department of Veterinary Pathobiology



November 2, 2011

Dr. Timothy J. Herrman  
Office of the Texas State Chemist  
State Chemist and Director  
445 Agronomy Road  
2114 TAMU  
College Station, Texas 77843-2114

Dear Dr. Herrman,

I am writing in support of the Graduate Certificate in Regulatory Science proposed by the Department of Soil & Crop Sciences. For the past year, Dr. Susie Dai, Research Assistant Professor, has been an active participant in the development of the curriculum. Her current development of a Web-based course titled Lab Quality Systems is evidence of her long-term commitment to the success of the program.

The availability of this and other Web-based regulatory science courses within the certificate program supports our goal to prepare students as future leaders in academic and industrial research and education.

Please accept my support for the approval of Graduate Certificate in Regulatory Science.

Sincerely,

A handwritten signature in blue ink, appearing to read 'Linda Logan', with a long horizontal flourish extending to the right.

Linda Logan, Professor and Head  
Veterinary Pathobiology  
College of Veterinary Medicine & Biomedical Sciences  
4467 TAMU  
College Station, Texas 77843-4467  
Phone: 979-845-5941  
Email: [LLogan@cvm.tamu.edu](mailto:LLogan@cvm.tamu.edu)

cc: Dr. Susie Dai, Associate Research Professor



4467 TAMU  
College Station, TX 77843-4467

Tel. 979.845.5941 Fax. 979.845.9231  
<http://vtpb-www.cvm.tamu.edu/>

Using Signature Pad: 1999. Revised 11/04. 02/11. Printed on Recycled Paper

## OFFICE OF THE TEXAS STATE CHEMIST

Texas Feed and Fertilizer Control Service • Agricultural Analytical Service  
445 Agronomy Road • College Station, TX 77843-2114

Mailing Address  
P. O. Box 3160  
College Station, TX 77841-3160

Tel. (979) 845 1121  
Fax. (979) 845 1389  
<http://otsc.tamu.edu>

November 10, 2011

Linda Logan  
Professor and Department Head  
Department of Veterinary Pathobiology  
Texas A&M University  
119 VMS, 4467 TAMU  
College Station, TX 77843-4467

Dear Dr. Logan,

I am writing to approve and ensure Dr. Dai's time commitment to teach the Laboratory Quality Systems course as part of the Graduate Certificate in Regulatory Science. As an employee of the Office of the Texas State Chemist with an ad loc in the Department of Veterinary Pathology, Dr. Dai has my support to develop and teach this course.

Best,



Dr. Timothy J. Herrman  
Professor, Department of Soil & Crop Sciences  
State Chemist and Director, Office of the Texas State Chemist  
445 Agronomy Road  
2114 TAMU  
College Station, Texas 77843-2114

cc: Dr. Susie Dai, Department of Veterinary Pathobiology





November 11, 2011

Dr. Timothy J. Herrman  
Professor, Department of Soil & Crop Sciences  
State Chemist and Director, Office of the Texas State Chemist  
445 Agronomy Road  
2114 TAMU  
College Station, Texas 77843-2114

Dear Dr. Herrman,

I am writing in support of the Graduate Certificate in Regulatory Science proposed by the Department of Soil & Crop Sciences. I anticipate that this program will have broad appeal to students at Texas A&M University, and specifically students enrolled in the Bush School's Master of Public Service and Administration (MPSA).

The online courses would complement our program with electives that focus on risk management, managerial economics and regulatory decision making as they relate to international, federal and state food policy.

I enthusiastically support the approval of the Graduate Certificate in Regulatory Science. Please contact me if I can be of assistance during your consideration of this proposal.

Sincerely,

A handwritten signature in black ink that reads "Jerry L. Mumpower". The signature is written in a cursive style with a large initial "J".

Dr. Jerry L. Mumpower  
Professor and Director of the Master of Public Service and Administration Program  
Joe R. and Teresa Lozano Long Chair  
The Bush School of Government and Public Service  
Texas A&M University  
1092 Allen Building, 4220 TAMU  
College Station, TX 77843-4220





COLLEGE OF AGRICULTURE  
AND LIFE SCIENCES  
DEPARTMENT OF  
AGRICULTURAL ECONOMICS

November 14, 2011

Dr. Timothy Herman  
State Chemist  
Texas AgriLife Research  
2142 TAMU  
College Station, TX 77843-2142

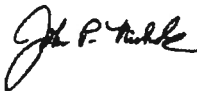
Dear Dr. Herrman,

I am writing in support of the Graduate Certificate in Regulatory Science proposed by the Department of Soil & Crop Sciences. For the past year, Dr. Victoria Salin, AGECE Associate Professor, has been an active participant in the development of the curriculum. Her current development of a Web-based course titled Managerial Economics for Regulatory Science is evidence of her commitment to the success of the program.

While we do not foresee AGECE students enrolling in Dr. Salin's Managerial Economics for Regulatory Science course, the certificate's curriculum supports our goal to educate students about real world issues in agribusiness and we anticipate that the other courses in the certificate program will benefit our students. Dr. Salin will be involved in co-teaching a course called Comparative Global Standards and I expect it to be of interest to students from the AGECE department.

Please accept my support for the approval of Graduate Certificate in Regulatory Science and contact me directly if I can be of further assistance.

Sincerely,



John P. Nichols, Professor and Head

cc: David Leatham, Associate Head for Graduate Studies  
Vicky Salin, Associate Professor

600 John Kimbrough Blvd., Suite 309  
2124 TAMU  
College Station, Texas 77843-2124

Tel. 979.845.2116  
Fax. 979.862.1563  
<http://agecon.tamu.edu>



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November 14, 2011

Dr. Tim Herrman  
State Chemist & Director  
Office of the Texas State Chemist  
College Station, Texas

Dear Dr. Herrman,

The Advisory Committee to the Office of the Texas State Chemist met September 23, 2011 and among the items discussed was the proposed graduate education certificate in Regulatory Science. At that meeting, the Advisory Committee members fully supported the proposed program.

The OTSC Advisory Committee is comprised of stakeholders who represent the major agricultural interests in the state of Texas. For example, I represent the agricultural interests in northeast Texas as a commercial feed manufacturer, fertilizer distributor, and as a representative for the Texas Agricultural Cooperative Council. The advisory committee includes representation by producers groups and agri-business including the Texas Grain and Feed Association, Texas Cattle Feeders Association, Texas Poultry Federation, Texas Corn Growers, Texas Sorghum Growers, and the Texas Agriculture Industry Association.

We believe Texas should play a prominent role in shaping national and international regulation of the feed and food supply and that Texas A&M University should be at the forefront of this dialogue by offering graduate training in regulatory science. In addition to my role as vice-chair of the OTSC advisory committee, I run a business regulated by OTSC. The OTSC model of pursuing a science-based approach to risk management has a positive impact on our cooperative and its competitiveness.

We appreciate the leadership you and the other faculty members at Texas A&M are providing to the regulatory community and Texas agriculture through this proposed graduate education program.

Please contact me if I can be of further assistance.

Sincerely,

Brad Johnson  
Vice-Chair, OTSC Advisory Committee  
General Manager  
Northeast Texas Farmers Co-op  
428 North Jackson  
Sulphur Springs, TX 75482

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