THE
UNIVERSITY
OF RHODE ISLAND APPENDIX C
Revised 10-2009
Abbreviated Proposal RIBGHE

A Proposal for a BS in Sustainable Agriculture and Food Systems, July 2015

A. PROGRAM INFORMATION

1. Name of institution
University of Rhode Island

2. Name of department, division, school or college

Primary Department: Department of Fisheries, Animal, and Veterinary Science (FAVS), CELS

Cooperating Departments and Colleges: College of the Environment and Life Sciences: Departments of Environmental and Resource Economics (ENRE), Landscape Architecture (LAR), Marine Affairs (MAF), Natural Resource Science (NRS), Nutrition and Food Sciences (NFS), Plant Sciences and Entomology (PSE); College of Arts & Sciences: Department of Sociology and Anthropology; College of Engineering: Department of Chemical Engineering.

3. Title of proposed program and Classification of Instructional Programs (CIP) code
BS in Sustainable Agriculture and Food Systems

01.01,	Agricultural Business and Management, including:
01.0103,	Agricultural Economics
01.03,	Agricultural Production Operations, including:
01.0301,	Agricultural Production Operations, General.
01.0302,	Animal/Livestock Husbandry and Production.
01.0303,	Aquaculture.
01.0304,	Crop Production.
01.0306,	Dairy Husbandry and Production
01.0308,	Agroecology and Sustainable Agriculture.
01.04,	Agricultural and Food Products Processing
01.07,	International Agriculture
01.10,	Food Science and Technology
01.12,	Soil Sciences, including
01.1201,	Soil Science and Agronomy, General
03.03,	Fishing and Fisheries Science and Management
19.05,	Foods, Nutrition, and Wellness Studies, General, including:
19.0501,	Foods, Nutrition, and Wellness Studies, General
19.0504,	Human Nutrition
30,	Multi/Interdisciplinary Studies
30.1901,	Nutrition Sciences
30.33,	Sustainability Studies

4. **Intended initiation date of program change. Include anticipated date for granting first degrees or certificates, if appropriate.**
   Initiation date – July 15, 2015
   First degree date – August 30, 2019

5. **Intended location of the program**
   Kingston, RI

6. **Description of institutional review and approval process**

Department:		Approval Date
FAVS		11/21/2014
ENRE		1/20/2015
LAR	Will Green	11/21/2014
MAF		12/16/2014
NFS		12/18/2014
NRS	Arthur J Gold	12/16/2014
PSE		12/18/2014
COM (A&S)	Kevin McClure Digitally signed by Kevin McClure DN: cn=Kevin McClure, o=URI, ou=Com Studies, email=kmcclure@uri.edu, c=US Date: 2014.12.16 11:58:43 -05'00'	
SOC (A&S)	Leo Carroll Digitally signed by Leo Carroll DN: cn=Leo Carroll, o=University of Rhode Island, ou=Sociology and Anthropology, email=leo.rc@uri.edu, c=US Date: 2014.12.19 10:35:58 -05'00'	
CHE (ENG)	Richard Brown (CHE) 12-15-14	
College:		
CELS		1/20/15
A&S		12/18/14
EGR	Raymond M. Wright, DOAN	12-15-14

CAC/Graduate Council

Faculty Senate

President of the University

7. Summary description of proposed program (not to exceed 2 pages)

Background. Faculty from the College of Environment and Life Sciences (CELS), the College of Arts & Sciences (A&S) and the College of Engineering (EGR) propose a B. S. degree in ***Sustainable Agriculture and Food Systems (SAFS)***. URI's unique set of expertise in coastal food production, agriculture, nutrition and food science, community planning and design, engineering, environmental management and policy, resource economics, business, environmental anthropology, sociology, and global development allow us to develop a pioneering integrated program ***using existing resources at URI***. Students completing this program will graduate with the skills and knowledge needed to contribute to sustainable development, production, harvesting, management, and utilization of terrestrial and aquatic microorganisms, plants and animals by society worldwide. The major will allow participants to explore the food chain, from farm to plate to waste and back, emphasizing sustainability, impacts on human health, and resilience from economic, environmental, and societal viewpoints. Core values of this interdisciplinary program that distinguish it from more traditional agriculture programs include an emphasis on the intrinsic value of heterogeneous scales of production (from small farms that sell directly to consumers to large scale producers), preserving local food cultures and biodiversity while understanding the way other cultures produce and use food (from local to global), and the greening of urban landscapes.

Program description. As a BS degree, SAFS will be an integrated interdisciplinary major drawing from sciences, engineering, nutrition, social sciences, and liberal arts to address questions of food supply, harvesting, production and distribution, environmental justice, economics, public policy, community design and societal impact. Students will have a broad interdisciplinary education complemented by a deep skill set in the chosen area of specialization (options in Food Production, Nutrition and Food, and Food and Society).

SAFS students will: (A) contextualize challenges related to sustainability of agricultural production, food processing, marketing, and distribution; (B) acquire competencies in addressing challenges, and (C) be positioned for employment or further study in a variety of sectors that focus on food production, food policy, economics, and culture, and human nutrition. Our graduates will be prepared to engage a wide range of agriculturally related issues such as population growth, climate change, food security, globalization, and the development of resilient plant and animal harvesting and production systems, through self-directed learning, collaborative, interdisciplinary, and international comparative experiences. This program will place unique emphasis on providing students with the skills to understand agriculture and food harvesting as a complex system and to be able to integrate multiple dimensions affecting food production, harvesting, and use from global to national to local and the interconnections. Another innovative aspect of the URI SAFS program is the unique integration of terrestrial (animals and plants), freshwater, and marine systems (both fisheries and aquaculture). Rhode Island is an ideal setting for students to develop their skills through experiential (or applied) learning opportunities due to our size and commitment to local food movement, urban agriculture, and coastal farmer's markets on a per capita basis, as well as our long-standing international reputation in coastal management and recent investments in international programs.

The SAFS will augment existing and proposed cross-disciplinary initiatives such as the Sustainability minor program, the University-wide sustainability initiative, innovative Honors Program courses on the environment, and the proposed major in Environmental Studies. In addition, given the evolving interdisciplinary clusters in Water Resources and Sustainable Energy at URI, the proposed SAFS major can contribute to the university-wide environmental research and

teaching emphasis, and contribute to a renaissance and re-embracing of our Land Grant heritage and philosophy in the context of 21st century challenges[1,2,3].

Programmatically, SAFS students will pursue a curriculum that draws from ***existing, relevant courses*** in many different disciplines (**NO NEW COURSES ARE REQUIRED**) to combine ***depth*** in a specialization area chosen from three options within the program (Food Production, Nutrition and Food, and Food and Society) with ***breadth*** across the natural and social sciences, engineering, and the arts and humanities. Structurally this will entail: 1) A common introductory core sequence emphasizing the interdisciplinary and systems-approach to sustainability. All the courses in this introductory sequence are available to the general student body as general education courses; 2) A intermediate-level framework of courses providing depth in the area of specialization (options) while reinforcing the interdisciplinary, systems-thinking focus of the major; and 3) A robust capstone experience in which students will master the ability to address the complex challenges in the area of sustainable agriculture and food systems through experiential learning in interdisciplinary teams. Integrated throughout will be conjoined emphases on critical reasoning and communication skills, scientific and quantitative methods, collaborative problem solving and experiential learning in multiple contexts including international study and internships. A **few, targeted courses** will provide an **integration** of the challenges and needs of food production, marketing, distribution, and consumption, as well as the opportunities that arise from a multi-trophic approach to growing, processing and delivering food. These courses will also strengthen existing undergraduate programs in the STEM and social sciences by opening the possibility of a minor in Sustainable Agriculture and Food Systems.

By the time of degree completion students will be uniquely poised to enter the workforce in the growing field of sustainable food systems or pursue graduate education/research opportunities. There is an emerging demand for knowledgeable workers in the area of food systems with awareness of the innovations in food policy and production that address the challenges of growing population and global change. Based on the environmentally concerned spirit of the times and students' current interest in courses dealing with the social, philosophical, scientific communication, and business aspects of environmental sustainability, we anticipate that the SAFS major will draw a considerable number of interested students especially those with aspirations and concerns for sustainability and local and global food security. According to the Bureau of Labor Statistics[4], employment of agricultural and food scientists is projected to grow 9% from 2012 to 2022, about as fast as the average for all occupations. We envision that the emphasis in environmental and social sustainability and health will provide our students with an advantage in the job market, since job sectors addressing population growth, economic conditions, and environmental concerns (*i.e.* environmental scientists, climate change analysts, chief sustainability officers, dieticians and nutritionists, community health workers, anthropologists) are expected to grow faster than average.

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[1] National Research Council of the National Academies. (2009). A New Biology for the 21st Century, National Academies Press, Washington, D.C. 98pp. (http://www.nae.edu/Publications/Reports/24908.aspx).

[2] The Agriculture and Food Research Initiative (AFRI) of the National Institute of Food and Agriculture of the US Department of Agriculture (NIFA-USDA). USDA leadership addresses challenges described in the "New Biology for the 21st Century Report" by identifying five primary research funding priorities (http://www.csrees.usda.gov/funding/afri/afri_synopsis.html):1) Keep American agriculture competitive while ending world hunger; 2) Improve nutrition and end child obesity; 3) Improve food safety for all Americans; 4) Secure America's energy future, and 5) Mitigate and adapt to climate change".

[3] Human Capacity Development, The Road to Global Competitiveness and Leadership in Food, Agriculture, Natural Resources, and Related Sciences FANRRS, 2009

[4] Bureau of Labor Statistics, www.bls.org. Accessed Dec 2014

8. Signature of the President

David M. Dooley

9. Person to contact during the proposal review

Name: Marta Gómez-Chiarri, Professor and Department Chair FAVS
Address: 169 CBLS, Kingston, RI
Phone: 401-874-2917
Email: gomezchi@uri.edu

10. Signed agreements for any cooperative arrangements made with other institutions/agencies or private companies in support of the program.

Not applicable

B. RATIONALE: There should be a demonstrable need for the program.

1. Explain and quantify the needs addressed by this program, and present evidence that the program fulfills these needs.

The goal of this program is to take advantage of URI's existing unique set of expertise in a diversity of areas including coastal food production, agriculture, nutrition and food science, community planning and design, engineering, environmental management and policy, resource economics, business, environmental anthropology, sociology, and global development to develop a pioneering integrated program. Students completing this program will graduate with the skills and knowledge needed to contribute to sustainable development, production, management, and utilization of terrestrial and aquatic microorganisms, plants and animals by society worldwide. The major will allow participants to explore the food chain, from farm to plate to waste and back, emphasizing sustainability, impacts on human health, and resilience from economic, environmental, and societal viewpoints. Core values of this interdisciplinary program that distinguish it from more traditional agriculture and fisheries programs include an emphasis on the intrinsic value of heterogeneous scales of production (from small farms that sell directly to consumers to large scale producers), preserving local food cultures and biodiversity while understanding the way other cultures produce, harvest, and use food, and the greening of urban landscapes.

According to the Bureau of Labor Statistics[5], employment of agricultural and food scientists is projected to grow 9% from 2012 to 2022, about as fast as the average for all occupations. We envision that the emphasis in environmental and social sustainability and health will provide our students with an advantage in the job market, since job sectors addressing population growth, economic conditions, and environmental concerns (*i.e.* environmental scientists, climate change analysts, chief sustainability officers, dieticians and nutritionists, community health workers, anthropologists) are expected to grow faster than average.

[5] http://www.bls.gov; December 2014

C. INSTITUTIONAL ROLE: The program should be clearly related to the published role and mission of the institution and be compatible with other programs and activities of the institution.

1. Explain how the program is consistent with the published role and mission of the institution and how it is related to the institution's academic planning.

By synthesizing existing curricula from CELS, A&S, and EGR, the SAFS program will help fulfill the vision of the URI Academic Plan as it calls for "new emphases relevant to a broad meaning of liberal learning and scholarship for the 21st century" as well as curricula that develop "our distinctive strengths in … environment/alternative energy/green economy [fields to] translate into learning and discovery that matters deeply in the world."

The proposed SAFS major directly answers several needs identified in the *Academic Plan.* In Section II, entitled *Prepare Students for a Changing World*, the AP specifically invites us to "Create interdisciplinary, team-based majors … accessible through one or more colleges… while sustaining programs that deliver disciplinary strength (p.10, under *B. Enhance interdisciplinary courses and programs*)." Additionally, the goals of the SAFS program clearly align with Section I, entitled *Enhance Academic Quality and Value*, which encourages us to "Integrate teaching and research across the University that addresses challenges of the environment and examines aspects of advancing a green economy (p.3)." Embedded in the SAFS program is a course framework and a high value placed on experiential learning, as mentioned in the AP (Section II. C.) Students in the proposed program will benefit greatly from faculty research on a wide range of problems and opportunities related to environmental sustainability, honing critical reasoning skills, which will translate into systems thinking, critical inquiry, problem solving, and social engagement.

Finally, SAFS themes overlap with AP emphases on *Global Citizenry* (AP Section IV) as well as *Inclusion and Respect* (Section V). Social justice and equality function as a critical foundation in any sustainable agriculture system and green economy. These values will permeate the SAFS major, which will offer dynamic, transformative, and action-oriented approaches to solving global challenges in sustainable food production. Through exposure to a range of disciplines and modes of inquiry, students will construct their own understanding of the interplay of resource distribution and depletion, human policies and environmental choices, and the evolution of the Earth. The overarching goal of the SAFS Program is to enable students to strengthen their commitment to sustainable agriculture, human and environmental equity and healthy food as essential requirements for building and sustaining the quality of life for future generations, and grow as socially engaged citizens through their academic work at URI.

The SAFS will augment existing and proposed cross-disciplinary initiatives such as the Sustainability minor program, the University-wide sustainability initiative, innovative Honors Program courses on the environment, and the proposed major in Environmental Studies. In addition, given the evolving interdisciplinary clusters in Water Resources and Sustainable Energy at URI, the proposed SAFS major can contribute to the university-wide environmental research and teaching emphasis, and contribute to a renaissance and re-embracing of our Land Grant heritage and philosophy in the context of 21st century challenges.

D. INTERINSTITUTIONAL CONSIDERATIONS: The program should be consistent with all policies of the Board of Governors pertaining to the coordination and collaboration between public institutions of higher education. (Consult the Board of Governors' *Coordination Plan for Academic Programs in Rhode Island Public*

Institutions of Higher Education **[www.ribghe.org/publicreg.htm] for guidelines and restrictions regarding the types and levels of programs the institutions are allowed to offer.)**

1. **Estimate the projected impact of program on other public higher education institutions in Rhode Island (e.g. loss of students or revenues), provide a rationale for the assumptions made in the projections, and indicate the manner in which the other public institutions were consulted in developing the projections.**

This program builds upon existing programs that are unique to URI and consistent with its Land and Sea Grant missions. There is no similar program in other institutions in Rhode Island. Therefore, this program will not negatively affect recruitment into other institutions in Rhode Island.

2. **Using the format prescribed by RIOHE, describe provisions for transfer students (into or out of the program) at other Rhode Island public institutions of higher education. Describe any transfer agreements with independent institutions. The institution must also either submit a Joint Admissions Agreement transition plan or the reason(s) the new program is not transferable. (See *Procedure for Strengthening the Articulation/Transfer Component of the Review Process for New Programs* which can be found at *www.ribghe.org/publicreg.htm*.)**

The proposed program builds on existing undergraduate program at URI that have long standing transfer agreements in place. We will work with CCRI and other institutions in Rhode Island to establish a specific Joint Articulation Agreement for entry into this major by their graduates. In all cases, as is current policy, every effort is made to ensure transfer of equivalent courses and associated credits when a transcript from another institution is evaluated.

3. **Describe any cooperative arrangements with institutions offering similar programs. (Signed copies of any agreements pertaining to use of faculty, library, equipment, and facilities should be attached.)**

No cooperative agreements exist at this time. We envision we may be able to establish a cooperative agreement with Johnson & Wales in the future. We have ongoing conversations with Department Chairs in Culinary Arts (William Idell) and Culinary Arts and Associate Studies (Maureen Pothier) on a potential exchange of students and shared courses. They are currently working on a proposal for a new major in sustainability and food, so we will be able to better establish an agreement once these programs are approved.

4. **If external affiliations are required, identify providing agencies. (Indicate the status of any arrangements made and append letters of agreement, if appropriate.)**

No external affiliations are required.

5. **Indicate whether the program will be available to students under the New England Board of Higher Education's (NEBHE) Regional Student Program (RSP).**

The Universities of Maine and New Hampshire are the only other institutions in New England

offering a Bachelor's degree in Sustainable Agriculture. The University of Vermont has a center for Sustainable Agriculture, but currently they only offer a Sustainable Landscape Horticulture minor. All New England states except Vermont recognize the University of Maine program.

E. PROGRAM: The program should meet a recognized educational need and be delivered in an appropriate mode.

1. Prepare a typical curriculum display for one program cycle for each sub-major, specialty or option, including the following information:

a. Name of courses, departments, and catalog numbers and brief descriptions for new courses, preferably as these will appear in the catalog. In keeping with each institution's timetable for completion of student outcomes assessment, each institution should provide an assessment plan detailing what a student should know and be able to do at of the program and how the skills and knowledge will be assessed. For example, if a department brings forth a new program proposal but that department is not slated to have its student outcomes assessment completed until 2008, the program could be approved but with the provision that the department return no later than 2008 and present to the Academic and Student Affairs Committee its student outcomes for that particular program.

This new program relies in existing courses in variety of majors offered by several departments and colleges. The assessment plan (Appendix 1) identifies the program goal that will be assessed during each reporting period over the next 6 years (3 two-year periods). All 4 program goals will be undergoing assessment by the fourth reporting period, with each goal represented by at least one student learning outcome. If this program is approved, the first assessment report will be due May 2017 based upon data from students enrolling in the program from the fall of 2015 through the spring of 2017. Individual and group assignments will be the primary means of assessment of learning outcomes. We expect that 90% of our students will earn an 80% or above on assignment rubrics.

b. Required courses in area of specialization and options, if any.

Note: Courses marked with a * are currently General Education courses and will likely be re-submitted as such. These courses could count for the General Education Requirement. See Appendix 1 for Curriculum Map and Program Assessment.

A.1. Core courses (or Introductory Professional Courses) *(Goal: Provide basic foundation in SAFS with an interdisciplinary focus) (19 credits)*

URI 101	Planning for Academic Success
COM 108*	Spaceship Earth
AVS 132*	Animal Agriculture, Food Policy, and Society
HSS 130*	The Problem of Hunger in the US
NFS 210*	Applied General Nutrition
EEC 105*	Introduction to Resource Economics
APG 301*	The Anthropology of Nutrition

A.2. Basic Sciences Requirement (12 credits)**:** BIO 101/103 (4 cr), BIO 102/104 (4 cr), either CHM101/102 or CHM103/105 (4 cr). (BIO262 is also highly recommended).

B. Option (or specialization) concentration courses *(Goal: Provide depth of knowledge in specialization area while maintaining interdisciplinary breadth in SAFS)***.** Students are required to take at least 19 credits from their chosen option and at least 6 credits from each of the other 2 options.

B.1. Sustainable Agriculture Option (Natural sciences). Students in this option will specialize in the harvesting and production of plants and animals for human uses. They will understand the integrated components of fisheries and agriculture systems (soils, microbes, plants, animals), and the impacts of agriculture and fisheries on the environment. They should be able to apply principles of microbiology, biology, physiology, pathology, and ecology to the sustainable harvest, production, and management of fisheries and agricultural species. Consistent with the focus on coastal agriculture and food harvesting, students may choose to focus in either plant or animal (aquatic or terrestrial) systems by choosing relevant courses from the list below. (Note: courses with ** are temporary courses that are being proposed as permanent).

Introduction to Fisheries and Agricultural Production: Choose 2 from:

AFS 102/104	Introduction to Aquaculture
AFS 120/121	Introduction to Fisheries
AVS 101/102*	Introduction to Animal Science
PLS 150*	Plants, People, and the Planet
PLS 255	Horticultural Plant Science

Management: Choose 2 from:

AFS 201/202	Finfish/Shellfish Aquaculture Lecture and Lab
AFS 321/322	World Fishing Methods, Lecture and Lab
AVS 104	Animal Management Techniques OR AVS 323/324 – Animal Management I, II
PLS 324/325	Vegetable Crops and Vegetable Crops Production Techniques
PLS 311	Fruit Culture

Environment: Choose 2 from:

NRS 212	Intro to Soil Science
AVS/PLS 275**	Pasture and Grazing Management in Sustainable Agriculture
CHE 212	Chemical Process Calculations (*CHM112 required or permission of instructor)

B.2. Nutrition and Food (Natural sciences – Healthy foods, healthy ecosystems, and healthy humans).
Students in this option will learn the basic principles of food science and nutrition.

NFS 212	Public Health Nutrition
NFS/MIC 245**	Food Safety
NFS 336	Scientific Principles of Food I
NFS 337	Scientific Principles of Food II
NFS 375	Foodservice Management I
NFS 376	Foodservice Management II

B.3. Food & Society Option (Social sciences – From local to global) . Students in this option will specialize in the social, political, economic, and marketing aspects of food production.

Policy:

MAF 100*	Human Use and Management of the Marine Environment
APG/MAF 413	Peoples of the Sea

Food, Culture, and Equity: Choose 2 from:

APG 203*	Cultural Anthropology
APG/SOC 329	Contemporary Mexican Society
APG/SOC 415	Migration in the Americas

Economics: Choose 2 from:

EEC 205	Resource Management and Conservation
EEC 310	Economics for Environmental Resource Management and Policy
EEC 350	Sustainable Energy Economics and Policy
EEC 355	The Economics of Climate Change

C. Capstone Experience (Experiential learning in interdisciplinary teams, Internships and International Experience). These courses will be required for all students (concentration). Students will perform 7 credits of internship/special projects/studio and 6 credits of two core courses that will guide students through an interdisciplinary problem-based project in sustainable agriculture and food systems.

<u>*Core Courses (6 credits):*</u>

NRS 300*	Introduction to Global Issues in Sustainable Development
AVS/NFS 504	Food Systems, Sustainability and Health

<u>*Internships and Experiential Learning courses (7 credits):*</u>

LAR 444 (4 cr.) Landscape Architecture Studio III: Sustainable Design (*Interdisciplinary teams of students and faculty working on a project related to challenges in sustainable agriculture and food systems, 4 credits*)

AND choose 1 other course from:

APG/SOC329 and SOC497 (3 options)
- Environment and Society in Oaxaca, Mexico (J-term) (I)
- Sustainable Communities and Food Cultures in Naples, Italy (summer) (I)
- Research and Service Learning in Oaxaca, Mexico (summer) (I)

AFS 391/392; AFS/AVS/PLS 491/492; NFS491	Special Projects
AVS/PLS 399; NFS451	Internships

c. Course distribution requirements, if any, within program, and general education requirements.

A1. Core courses:	19 credits (18 of those can be used to fulfill General Education requirements)
A2. Basic Sciences:	12 credits
A3. General Education:	36 (at least 24 of those can be fulfilled by concentration/core and the interdisciplinary component)
B. Concentration Courses:	19 credits (option specific) + 12 credits (Interdisciplinary component)
C. Capstone Experience:	13 credits
D. Supporting Electives:	18 credits
E. Free electives:	15 credits
Total:	120 credits

d. Total number of free electives available after specialization and general education requirements are satisfied.

15 credits. See Appendix I for a list of supporting electives. In addition to the 12 required credits from other options that constitute the interdisciplinary component of the concentration, students can also take other concentration courses from the other 2 options as supporting electives.

e. Total number of credits required for completion of program or for graduation. Present evidence that the program is of appropriate length as illustrated by conformity with appropriate accrediting agency standards, applicable industry standards, or other credible measure, and comparability of lengths with similar programs in the state or region.

A total of 120 credits will be required for graduation.

f. Identify any courses that will be delivered or received by way of distance learning. (Refer to *www.ribghe.org/publicreg.htm* for the *Standards for Distance Learning in the Rhode Island System of Public Higher Education*.)

None currently.

2. Describe certification/licensing requirements, if any, for program graduates and the degree to which completion of the required course work meets said requirements. Indicate the agencies and timetables for graduates to meet those requirements.

Not applicable, this will not be a certified program.

3. Include the learning goals (what students are expected to gain, achieve, know, or demonstrate by completion of the program) and requirements for each program.

Learning outcomes have been developed to clearly delineate the key aspects of the program: systems-thinking, interdisciplinary approaches and teams, from local to global, experiential learning. Students will **(learning goal in bold,** outcomes embedded within learning goals)**:**

1. **Understand the complexity of the biological, cultural, social, economic, and political issues involving the sustainable harvesting, production, processing, marketing, and use of food (systems-thinking).**
   1.1. Appraise the integrated nature of agricultural and food systems.
   1.2. Explain the scientific basis and interdisciplinary approaches used in the study of sustainable agricultural and food systems.
2. **Contextualize the important role of food in our cultures and societies, from the local to the global scales.**
   2.1. Examine the dynamics of diversity, equity, access, and security in relation to elements in the food systems.
   2.2. Discuss the different ways in which food is produced and used in different cultures.
3. **Acquire depth of knowledge (skills and competency) in their chosen field of expertise (food production, nutrition and food, food and society) needed to address the challenges involved in the sustainable harvesting, production, processing, marketing, and use of food.**
   3.1. Evaluate which management practices are used in the sustainable harvesting and production of food at scales from local to global (food production option)

3.2. Evaluate the role of sustainable agricultural and food systems in providing healthy food that is equitable accessible to all (food and nutrition option).
3.3. Evaluate the interrelatedness between sustainable agriculture and food systems and culture, welfare, economy, and policy from the local to the global scales (food and society option)

4. Be able to work in interdisciplinary teams to provide solutions to the complex challenges facing the sustainable harvesting, production, processing, marketing, and use of food.

4.1. Create local and global solutions to a wide variety of complex challenges related to sustainable agricultural and food systems using interdisciplinary approaches and teams

4. Demonstrate that student learning is assessed based on clear statements of learning outcomes and expectations.

See Appendix 1 for curriculum map, assessment timeline and methods. The curriculum map identifies the courses that are used to introduce, reinforce or emphasize each of the learning goals. The assessment timeline indicates at which time points the program will be assessed, and which methods will be used to assess each of the learning goals. All 4 program goals will be undergoing assessment by the fourth reporting period, with each goal represented by at least one student learning outcome. If this program is approved, the first assessment report will be due May 2017 based upon data from students enrolling in the program from the fall of 2015 through the spring of 2017. Individual and group assignments will be the primary means of assessment of learning outcomes. We expect that 90% of our students will earn an 80% or above on assignment rubrics. These rubrics will be developed by an interdisciplinary group of faculty. The URI Office of Student Learning Outcomes, Assessment and Accreditation has approved the assessment plan for the Program (November 2014).

F. FACULTY AND STAFF: The faculty and support staff for the program should be sufficient in number and demonstrate the knowledge, skills, and other attributes necessary to the success of the program.

1. Describe the faculty who will be assigned to the program. Indicate total full-time equivalent (FTE) positions required for the program, the proportion of program faculty who will be in tenure-track positions, and whether faculty positions will be new positions or reassignment of existing positions.

This interdisciplinary program will be managed by a curriculum committee composed of existing faculty and staff at URI that represent the different disciplines, departments, and colleges. We will follow up recommendations described in the "Interdisciplinary Work: Guidelines and Practices" website to encourage interdisciplinary collaborations as applied to the revision of existing courses and the development of future new courses, experiential learning activities, and research. For example, when possible, we will encourage faculty holding joint appointments (e.g. Carlos Garcia-Quijano, who holds a joint appointment in Sociology, College of A&S, and Marine Affairs, CELS) to become members of our curriculum committee. In the future, we also seek to grow faculty involved in the program through Cluster Hires. Team-teaching will be highly encouraged for the core courses in the program, and especially for the capstone and experiential learning courses. Many of the courses are already team-taught or have contributions of faculty from different disciplines (e.g. AFS132, AFS102, AVS/NFS504).

The program has been designed to clearly guide students through 3 areas of specialization, based on interests on either food production (Food Production option), nutrition (Nutrition and Food

option), or social issues regarding food (Food and Society option). The requirements for each option are clearly described in the curriculum map (Appendix 1), and students will be provided with academic maps. When joining the program, students will be advised to choose one of the options or areas of specialization, according to their interests. In order to facilitate program management and avoid confusion amongst students, the program will be housed in the College of the Environment and Life Sciences and managed through CELS.

The **curriculum committee** will be responsible for general management of the program, including development of recruitment and retention strategies, curriculum development, and program assessment. Since this program fully relies on existing curriculum and curricular resources, we are relying on existing faculty with research and teaching interests in related programs and that have been already been involved in the graduate specialization in Sustainable Agriculture and Food Systems. We don't envision a large time investment in the management of the program. The % effort included below are just estimates and will be revised according to the success of the program. Members of the curriculum committee will also be responsible for student advising, in addition to a professional advisor provided by CELS.

SAFS Curriculum Committee Chair: Marta Gomez-Chiarri (Professor and Department Chair, Fisheries, Animal and Veterinary Science, CELS) (estimated appointment: 5%) – As Chair of the FAVS department, Dr. Gomez-Chiarri is responsible for the management of 2 of the programs contributing courses and faculty to the proposed major (Aquaculture and Fisheries, Animal Science). Until her recent appointment to FAVS Chair, she was graduate program coordinator for the Sustainable Agriculture and Food Systems specialization of the Biological and Environmental Sciences Graduate Programs. Therefore, she has experience in managing and promoting an interdisciplinary program, and has established research and teaching collaborations with many of the faculty involved in the proposed program.

Rebecca Brown (Associate Professor, Department of Plant Sciences and Entomology) (estimated appointment: 2.5%). Dr. Brown has ongoing research collaborations with faculty in the Animal Sciences and Sociology and Anthropology Departments, teaches several of the courses in the program, and lectures in several of the interdisciplinary courses. Dr. Brown and Dr. Gomez-Chiarri will be responsible for the coordination of the Food Production option.

Ingrid Lofgren (Associate Professor, Department of Nutrition and Food Science) (estimated appointment: 2.5%): Dr. Lofgren team-teaches AVS/NFS504 with Dr. Sartini (Animal Science) and teaches several of the courses in the program. Dr. Lofgren will be responsible for the coordination of the Nutrition and Food Option.

Thomas Sproul (Assistant Professor, Department of Environmental and Natural Resource Economics) (estimated appointment: 2.5%). With an expertise in Agricultural Economics, Dr. Sproul has ongoing research collaborations with faculty in FAVS, teaches several of the core or concentration courses in the program, and is invited lecturer in several of the interdisciplinary core courses. Dr. Sproul will share with Drs. Garcia-Quijano and Pisa the management of the Food and Society Option.

Carlos Garcia-Quijano (Associate Professor, joint appointment between Sociology and Anthropology and Marine Affairs) (estimated appointment: 2.5%). With expertise in Ecological Anthropoloy, Dr. Garcia-Quijano teaches several of the core or concentration courses in the program, and is invited lecturer in several of the interdisciplinary core courses. Dr. Garcia-Quijano will share with Drs. Sproul and Pisa the management of the Food and Society Option.

Rosaria Pisa (Lecturer, Department of Sociology and Anthropology). Dr. Pisa teaches several of the core or concentration courses in the program, and is invited lecturer in several of the interdisciplinary core courses. She is also responsible for teaching several of the travel courses part of the capstone experience. Dr. Pisa will share with Drs. Garcia-Quijano and Sproul the management of the Food and Society Option.

Mercedes-Rivero-Hudec (Associate Professor, Department of Chemical Engineering) (estimated appointment: 2.5%). Dr. Rivero-Hudec teaches one of the core courses in the program and is involved in several initiatives focused in the development of resources for teaching and research in the area of Sustainability. She has experience in student recruitment and retention, with a focus on enhancing diversity.

Other faculty involved in program delivery: In addition to the faculty listed above, the following faculty and lecturers are involved in core course delivery and have been involved in the development of the proposal. These faculty have expertise in either the natural, engineering, or social aspects of food production and have active research and teaching programs related to Sustainable Agriculture and Food Systems.

Department of Communication (COM): Norbert Mundorf (Professor)

Department of Fisheries, Animal and Veterinary Science (AVS and AFS courses): David Bengtson (Professor, AFS), Terry Bradley (Professor, AFS), Chris Card (Lecturer, AVS), Kathy Castro (Staff, Ph.D., AFS), Fred Launer (Lecturer, AVS), Tony Mallilo (Professor, AVS), Katherine Petersson (Associate Professor, AVS), Michael Rice (Professor, AFS), Becky Sartini (Associate Professor, AVS).

Department of Landscape Architecture (LAR courses): William Green (Professor and Chair), Richard Sheridan (Professor).

Department of Marine Affairs (MAF courses): Tracey Dalton (Associate Professor), Jessica Frazer (Visiting Assistant Professor), Carlos Garcia-Quijano (Associate Professor).

Department of Natural Resources (NRS courses): David Abedon (Professor), Jose Amador (Professor).

Department of Plant Sciences and Entomology (PLS courses): Brian Maynard (Professor), Nathaniel Mitkowski (Professor and Chair), Michael Sullivan (Professor).

College of Arts and Sciences: Earl N. Smith III (Lecturer of Africana Studies and Assistant Dean), Kathleen Gorman (Professor, Department of Psychology).

G. STUDENTS: The program should be designed to provide students with a course of study that will contribute to their intellectual, social and economic well-being. Students selected should have the necessary potential and commitment to complete the program successfully.

1. Describe the potential students for the program and the primary source of students. Indicate the extent to which the program will attract new students or will draw students from existing programs and provide a specific rationale for

these assumptions. For graduate programs, indicate which undergraduate programs would be a potential source of students.

The SAFS program at URI will be one of a few interdisciplinary programs in Food Systems, Food Science or Sustainable Agriculture and Food Systems recently developed nationwide (e.g. UC Davis, UNH, Indiana U) to address current and future challenges in food security[6]. It is also the only one with an explicit focus on Coastal Systems. This program is also unique in combining strength on all the relevant areas (Production, Nutrition, and Social Systems). Based on the environmentally concerned spirit of the times and students' current interest in courses dealing with the social, philosophical, scientific communication, and economic aspects of environmental sustainability, we anticipate that the SAFS major will draw a considerable number of interested students especially those with aspirations and concerns for sustainability and local and global food security. After completing the SAFS major, students will be prepared for a wide variety of jobs that will require that the individual have a "systems" understanding of food and sustainability and to work within the interdisciplinary nature of food. Examples of job positions that the SAFS degree will train our students for include opportunities directly in small and large scale food production and harvesting on terrestrial farms (animal, vegetable, fruit), aquaculture facilities, and fisheries (e.g. Southside Community Land Trust). Opportunities are also available in food marketing, distribution, and direct sales from farmers markets (Farm Fresh RI, Sea Fresh USA) to national and international food distribution firms. Other job opportunities include jobs at non-profit organizations (food banks), government and policy (Rhode Island Food Policy Council, RI DEM, NRCS, USDA, FAO, USAID) and educational opportunities in agriculture, nutrition and policy in Food Hubs (redtomato.org) and universities (Yale Sustainable Food Project). Our students will also receive excellent training for outreach and extension in sustainability and food, and will be well prepared for careers in writing and art (Modern Farmer magazine).

L. EVALUATION: Appropriate criteria for evaluating the success of a program should be development and used.

1. List the performance measures by which the institution plans to evaluate the program. Indicate the frequency of measurement and the personnel responsible for performance measurements. Describe provisions made for external evaluation, as appropriate.

A SAFS Curriculum Committee (see above) will oversee program evaluation. The following measures will be used to evaluate the program:

1. Student enrollment – Yearly figures, available on eCampus, will be evaluated to determine if the target (growing from 20 – 60 students by year 4) has been reached. Strategies for recruitment will be revised through input from incoming students in the program and conversations with parents and students during open house and welcome day events.
2. IDEA Course Evaluations – We will perform yearly evaluations of student evaluations of core and capstone courses in the program. Targeted questions relevant to program goals will be included in some of the key program courses (AVS132, APG301, AVS/NFS504).
3. Program Evaluation – SurveyMonkey (1 -5 scale, with 5 being best and 1 being worst; target is a minimum of 3 on the scale) will be used to administer surveys to the following program participants:
    a. Program students (mid-program) and graduates – students will have the option to make

[6] Spiegel JA. Truly Food for Thought. The New York Times, April 13, 2012

the survey anonymous. Questions relevant to the program goals will be developed.

b. Student Internship Supervisors (for those performing internships). Supervisors will be asked to rank the preparation of the students on specific goals and the professionalism.

Student Learning Outcomes and Program Assessment Curriculum Map
Sustainable Agriculture and Food Systems, BS

updated: 3.3.2015

Map Key
I = Outcome Introduced
R = Outcome Reinforced
E = Outcome Emphasized for Mastery

		CORE COURSES (A)						FOOD PRODUCTION (B1)				NUTRITION & FOOD (B2)							FOOD & SOCIETY (B3)				CAP-STONE (D)		
	Program Student Learning Outcomes:	COM108	AVS132	HSS130	APG301	NFS210	EEC105	PRODUCTION: 2 FROM AFS102/104, AFS120/121, AVS101/102, PLS150, PLS255	ENVIRONMENT: 2 FROM NRS212, CHE212, PLS275	MANAGEMENT: 2 FROM AFS201/202, 321/323,AVS104, 323/324, PLS311,PLS324/325	INTERDISCIPLINARY COMPONENT – 1 COURSE EACH FROM B2 AND B3	NFS212	NFS 245	NFS336	NFS337	NFS375	NFS376	INTERDISCIPLINARY COMPONENT – 1 COURSE EACH FROM B1 AND B3	CULTURE: 2 FROM: APG203, APG/SOC329, APG/SOC415	POLICY: CHOSE 2 FROM MAF100, APG/MAF413,MAF 330	ECONOMICS: 2 FROM EEC205, 310,EEC350, EEC355	INTERDISCIPLINARY COMPONENT – 1 COURSE EACH FROM B1 AND B2	INTERNSHIP or SPECIAL PROJECT	NRS300	AVS/NFS504
1.1	**Appraise** the integrated nature of agricultural & food syst.	I	I		I			I	R	R	R	I		I				R	R	I R	R	R	E	E	E
1.2	**Explain** the scientific basis and interdisciplinary approaches used in the study of SAFS	I	I	I	I	I	I	I	R	R		R	R	R	R	R	R		R	I R	R		E	E	E
2.1	**Examine** the dynamics of diversity, equity, access, and security in relation to elements in the food syst.		I	I	I	I					R	I		I				R	R	I R	R		E	E	E
2.2	**Discuss** the different ways in which food is harvested, produced and used in different cultures		I		I			I	R		R	I			E	E	E	R	R	I R	R	R	E	E	E
3.1	**Evaluate** which management practices are used in the sustainable production of food at scales from local to global		I		I			R	R	E								R	I			R	E	E	E
3.2	**Evaluate** the role of sustainable agricultural and food systems in producing healthy food that is equitable & accessible to all.		I	I	I	I					R	I	R	R	E	E	E		R				E	E	E
3.3	**Evaluate** the interrelatedness between sustainable agriculture and food systems and culture, welfare, economy, and policy from the local to the global scales	I	I	I			I				R	R						R	R	R	R	R	E	E	E
4.1	**Create** local & global solutions to a wide variety of complex challenges related to sustainable agricultural and food systems using interdisciplinary approaches & teams	I	I	I	I	I	I	I	R	R	R			R				R	R	I R	R	R	E	E	E

Student Learning Outcomes and Program Assessment Curriculum Map
Sustainable Agriculture and Food Systems, BS

updated: 3.3.2015

Learning goals:

Students will **(learning goal in bold,** outcomes embedded within learning goals)**:**

1. **Understand the complexity of the biological, cultural, social, economic, and political issues involving the sustainable harvesting, production, processing, marketing, and use of food (systems-thinking).**
   1.1. Appraise the integrated nature of agricultural and food systems.
   1.2. Explain the scientific basis and interdisciplinary approaches used in the study of sustainable agricultural and food systems.
2. **Contextualize the important role of food in our cultures and societies, from the local to the global scales.**
   2.1. Examine the dynamics of diversity, equity, access, and security in relation to elements in the food systems.
   2.2. Discuss the different ways in which food is produced and used in different cultures.
3. **Acquire depth of knowledge (skills and competency) in their chosen field of expertise (food production, nutrition and food, food and society) needed to address the challenges involved in the sustainable harvesting, production, processing, marketing, and use of food.**
   3.1. Evaluate which management practices are used in the sustainable harvesting and production of food at scales from local to global (food production option)
   3.2. Evaluate the role of sustainable agricultural and food systems in providing healthy food that is equitable accessible to all (food and nutrition option).
   3.3. Evaluate the interrelatedness between sustainable agriculture and food systems and culture, welfare, economy, and policy from the local to the global scales (food and society option)
4. **Be able to work in interdisciplinary teams to provide solutions to the complex challenges facing the sustainable harvesting, production, processing, marketing, and use of food.**
   4.1. Create local and global solutions to a wide variety of complex challenges related to sustainable agricultural and food systems using interdisciplinary approaches and teams

Student Learning Outcomes and Program Assessment Curriculum Map
Sustainable Agriculture and Food Systems, BS

updated: 3.3.2015

III. Assessment Timeline: Indicates when and how student learning will be assessed based on clear statements of learning outcomes and expectations. Refer to the curriculum map to draft a student learning outcomes assessment timeline. Specify a 6-year plan for assessment (3 two-year periods) in which you will assess all of your program's Goals with at least one student learning outcome representing each Goal.

Academic Years	Outcome(s)	Course(s) and Other Program Requirements	Assessment Evidence (direct/indirect)	Assessment Method
	WHICH outcome(s) will you examine in each period (by number, i.e. 1.1 etc.)?	WHERE will you look for evidence of student learning (i.e., what course(s)/program requirements)? Designate for each outcome.	WHAT student work or other evidence will you examine in order to generate conclusions and recommendations? Designate for each requirement.	HOW will you look at the evidence; what means will you use to quantify the evidence? Designate for each source of evidence.
Assessment Reporting Period 1 2015-17	1.2	COM108	Direct evaluation of a group project that creates a campaign encouraging sustainable and environmentally responsible behavior regarding food systems among a target audience by providing information and persuasive material.	An interdisciplinary team of faculty will develop a rubric that determines the ability of students to use principles of sustainability to communicate a message to a target audience.
Assessment Reporting Period 2 2017-19	3.1 (Option B1) 3.2 (Option B2) 3.3 (Option B3)	Option B1: AFS201/202 or AVS104 or PLS324/325 Option B2: NFS375 Option B3: APG301	Option B1: Learning will be directly assessed through students' demonstrated skills on the husbandry of relevant animal/plant species during a laboratory exercise or evaluation of a husbandry journal. Option B2: Direct assessment on food service projects that students complete during the course. Option B3: Direct assessment of students' understanding of the role of food and agriculture in society through evaluation of the term assignment.	Faculty from each option will collaborate on developing a rubric relevant to the option.
Assessment Reporting Period 3 2019-21	4.1	AVS/NFS504	Team project: Direct evaluation of a presentation and/or team paper that provide solutions to a chosen problems in sustainable agriculture and food systems.	An interdisciplinary team of faculty will design a rubric that assesses: the importance of the problem chosen, the breath of the interdisciplinary approach, the depth of expertise within each of the areas of expertise of the interdisciplinary project, Rubric for term paper

Student Learning Outcomes and Program Assessment Curriculum Map
Sustainable Agriculture and Food Systems, BS

updated: 3.3.2015

Course descriptions (*General Education course; ** previous temporary courses proposed as permanent)

A1. Core courses (Goal: Provide basic foundation in SAFS with an interdisciplinary focus) (18 credits)

URI 101	Planning for Academic Success
COM 108*	Spaceship Earth
AVS 132*	Animal Agriculture, Food Policy, and Society
HSS 130*	The Problem of Hunger in the US
NFS 210*	Applied General Nutrition
EEC 105*	Introduction to Resource Economics
APG 301*	The Anthropology of Nutrition

A.2 BASIC SCIENCES (12 credits): Required: BIO 101/103 (4 cr), BIO 102/104 (4 cr), either CHM101/102 or CHM103/105 (4 cr) (highly recommended BIO262 and one Statistics course)

B. Specialization courses (Goal: Provide depth of knowledge in specialization area while maintaining interdisciplinary breadth in SAFS)

Students are required to take at least 19 credits from their chosen option and at least 6 credits from each of the other 2 options (interdisciplinary component).

B.1. Sustainable Agriculture Option (Natural sciences – From elements to ecosystems)

Students in this option will specialize in the production of plants and animals for human uses. They will understand the integrated components of agriculture systems (soils, microbes, plants, animals), and the impacts of agriculture on the environment. They should be able to apply principles of microbiology, biology, physiology, pathology, and ecology to the sustainable production and management of agricultural species. Consistent with the focus on coastal agriculture and food harvesting, students may choose to specialize in either plant or animal (aquatic or terrestrial) agricultural systems.

Introduction to Agricultural Production: Choose 2 from

AFS 102/104	Introduction to Aquaculture
AFS 120/121	Introduction to Fisheries
AVS 101/102*	Introduction to Animal Science
PLS 150*	Plants, People, and the Planet
PLS 255	Horticultural Plant Science

Management: Choose two from:

AFS 201/202	Finfish/Shellfish Aquaculture
AFS 321/323	World Fishing Methods, Lecture and Laboratory
AVS 104	Animal Management Techniques or AVS 323/324 – Animal Management I, II
PLS 324/325	Vegetable Crops and Vegetable Crops Production Technologies
PLS 311	Fruit Culture

Environment: Choose two from:

NRS 212	Intro to Soil Science
AVS/PLS 275**	Pasture and Grazing Management in Sustainable Agriculture
CHE 212	Chemical Process Calculations

B.2. Nutrition & Food Option (Natural sciences – Healthy foods, healthy ecosystems, and healthy humans)

Students in this option will learn the basic principles of food science and nutrition.

NFS 212	Public Health Nutrition

Student Learning Outcomes and Program Assessment Curriculum Map
Sustainable Agriculture and Food Systems, BS

updated: 3.3.2015

NFS/CMB 245	Food Safety
NFS 336	Scientific Principles of Food I
NFS 337	Scientific Principles of Food II
NFS 375	Foodservice Management I
NFS 376	Foodservice Management II

B.3. Food & Society Option (Social sciences – From local to global)

Students in this option will specialize in the social, political, economic, and marketing aspects of food production.

Policy:

MAF 100*	Human Use and Management of the Marine Environment
APG/MAF 413	Peoples of the sea

Food, Culture, and Equity: Choose 2 from:

APG 203* -	Cultural Anthropology
APG/SOC 329	Contemporary Mexican society
APG/SOC 415	Migration in the Americas

Economics: Choose 2 from:

EEC 205	Resource Management and Conservation
EEC 310	Economics for Environmental Resource Management and Policy
EEC 350	Sustainable Energy Economics and Policy
EEC 355	The Economics of Climate Change

C. Capstone Experience (Experiential learning in interdisciplinary teams, Internships and International Experience)

These courses will be required for all students (concentration). Students will perform 7 credits of internship/special projects/studio and 6 credits of two core courses that will guide students through an interdisciplinary problem-based project in sustainable agriculture and food systems.

Core Courses (6 credits):

NRS 300*	Introduction to Global Issues in Sustainable Development
AVS/NFS 504	Food Systems, Sustainability and Health

Internships and Experiential Learning courses (7 credits):

LAR 444 (4 cr.)	Landscape Architecture Studio III: Sustainable Design (*Interdisciplinary teams of students and faculty working on a project related to challenges in sustainable agriculture and food systems, 4 credits*)

AND choose 1 other course from:

APG/SOC329 and SOC497 (3 options)	Environment and Society in Oaxaca, Mexico (J-term) (I)
	Sustainable Communities and Food Cultures in Naples, Italy (summer) (I)
	Research and Service Learning in Oaxaca, Mexico (summer) (I)
AFS 391/392; AFS/AVS/PLS 491/492; NFS491	Special Projects
AVS/PLS 399; NFS451	Internships

Student Learning Outcomes and Program Assessment Curriculum Map
Sustainable Agriculture and Food Systems, BS

updated: 3.3.2015

LIST OF SUPPORTING ELECTIVES (Note: This list does not include the core or concentration courses, which are included above; **in bold: recommended courses**)

AAF 201 Introduction to Africana Studies
AAF 240 Race and Ethnic Relations
AAF 290 African-American Women: Service, Community, and Self
AAF 300 The History, Politics, and Culture of Cape Verde
AAF 336 Social Inequality
AAF 390 Directed Study/Topics in Film Media Production
AAF 410 Issues in African Development
AAF 415 Dynamics of Social Change in the Caribbean
AAF 466 Urban Problems
AAF 498 Senior Seminar in African and Afro-American Studies
AFS 190 Issues in Biotechnology
AFS 210 Introduction to the Marine Environment
AFS 211 Introduction to the Marine Environment Laboratory
AFS 315 Living Aquatic Resources
AFS 316 Living Aquatic Resources Laboratory
AFS 321 World Fishing Methods
AFS 322 Laboratory for World Fishing Methods
AFS 362 Crustacean Aquaculture
AFS 415 Fishery Science
AFS 416 Fishery Science Laboratory
AFS 425 Aquaculture and the Environment
AFS 481 Shellfish Aquaculture Laboratory
AFS 483 Salmonid Aquaculture
AFS 486 Fish Physiology
AFS 500 Diseases of Aquatic Organisms
AFS 531 Fisheries Stock Assessment
AFS 584 Advanced Aquaculture Systems
APG 200 Language and Culture
APG 302 Methods of Anthropological Inquiry
APG 315 Cultures and Societies of Latin America
APG 465 Seminar in Cultural Heritage
APG 470 Problems in Anthropology
AVS 332 Animal Diseases
AVS 331 Anatomy and Physiology
AVS 333 Anatomy and Physiology Laboratory
AVS 412 Animal Nutrition
AVS 420 Animal Breeding and Genetics
AVS 472 Physiology of Reproduction
AVS 473 Physiology of Reproduction Laboratory
BCH 211 Biochemical Aspects of Nutrition and Physiology
BCH 311 Introductory Biochemistry
BCH 312 Introductory Biochemistry Laboratory
BIO 302 Animal Development
BIO 311 Plant Structure and Development
BIO 321 Plant Diversity
BIO 323 Field Botany and Taxonomy
BIO 346 Plant Physiology
BIO 348 Plant Physiology Laboratory
BIO 366 Vertebrate Biology
BIO 441 Environmental Physiology of Animals
BPS 203 Herbal Medicines and Functional Food
BUS 365 Marketing Principles
BUS 460 Global Supply Chain Management
CPL 202 Introductory Urban Geography: Understanding Cities
CPL 391 Directed Study in Community Planning
CPL 410 Fundamentals of Community Planning Practice
CPL 485 Environmental Planning
CPL 498 Community Planning Seminar
CVE 374 Environmental Engineering
CVE 375 Environmental Engineering Laboratory
CVE 474 Water Quality Sampling And Analysis
CVE 475 Water in the Environment
CVE 477 Environmental Sustainability and Green Engineering
EEC 440 Benefit-Cost Analysis
EEC 441 Markets, Trade, and Natural Resources
ENT 385 Introductory Entomology
ENT 387 Economic Entomology
ENT 411 Pesticides and the Environment
GEO 305 Global Climate Change
GEO 482 Innovative Subsurface Remediation Technologies
GEO 483 Hydrogeology
GWS 150 Introduction to Gender and Women's Studies
HIS 117 History of Medicine
HIS 346 Immigration, Ethnicity, and Race in America
ITL 315 Italian Cinema
LAR 201 Survey of Landscape Architecture
LAR 434 Introduction to Environmental Law
MAF 220 Introduction to Marine and Coastal Law
MAF 330 World Fishing
MAF 523 Fisheries Law and Management
MAF 582 Coastal Ecosystem Governance
NFS 276 Food, Nutrition, and People
NFS 431 Chemistry of Food and Nutraceuticals
NRS 411 Population and Environmental Change
NRS 412 Soil-Water Chemistry
NRS 414 Climate Change Science and Policy
NRS 426 Soil Microbiology
NRS 450 Soil Conservation and Land Use
NRS 461 (361) Watershed Hydrology and Management
NRS 471 Soil Morphology and Mapping
PLS 200 Introduction to Plant Protection
PLS 215 Propagation Of Plant Materials
PLS 250 Plant Breeding and Genetics
PLS 301 Nursery Crop Production and Management
PLS 332 Plant Pathology
PSC 403 Global Ecopolitics
SOC 300 Topics In Sociology
SOC 336 Social Inequality

From: **Elaine** efinan@mail.uri.edu
Subject: Re: SAFS assessment
Date: November 6, 2014 at 5:06 PM
To: Marta Gomez-Chiarri gomezchi@uri.edu

Hi Marta,

Your document was open on my desktop all day and it kept getting neglected! You are right that the rain, plus the early darkness makes our days short and sleepy! I am sorry about the delay.

The assessment section of the new program proposal for SAFS is very well defined. The curriculum map reflects the intentionality of the program design to achieve the outcomes, and the timeline presents a clear plan for reporting, attending 3 of the 4 major learning goals within the first 3 reporting cycles. Once the program gets approved, we'll look for a first formal assessment report in May, 2017.

Congratulations to you and your team. I wish you the best of luck getting through the channels so you can get to the work of implemntating an important program!

Best,

Elaine

On 11/6/14, 4:08 PM, "Marta Gomez-Chiarri" <gomezchi@uri.edu> wrote:

> Hi Elaine,
>
> Did you get a chance to look at the SAFS assessment? Sorry to be a pest, I just want to make sure I didn't miss anything from you!
>
> Cheers, hope you are enjoying the rain (it makes me so sleepy, I am ready to call it a day already!)
>
> Marta

LIBRARY IMPACT STATEMENT (New Course Proposal)
LIBRARIAN'S ASSESSMENT

Subject selectors will complete this form as requested, assessing library materials and collections as detailed below. Send one copy of the assessment to the faculty member who requested it. Send one copy of the assessment to the Collection Management Officer.

Program: Sustainable Agriculture and Food Systems

Department, College: Fisheries, Animal and Veterinary Sciences. CELS

Faculty Member: Professor Marta Gomez-Chiarri

Date returned to Faculty: November 12, 2014

Librarian Completing Assessment: Michael A. Cerbo II

Collection Management Officer: Professor Joanna Burkhardt

This new Bachelor of Science program is titled "Sustainable Agriculture and Food Systems" and utilizes existing courses across disciplines. The goal of this new interdisciplinary program is to "…provide an umbrella to facilitate training of students…" in this growing field of study. Since there is a capstone involved with the program, the Professor expects the students to conduct research using books, periodicals and other resources in the subject area. Some of the major subjects that will be covered include agriculture, food science, fisheries, sustainable energy, economics, public policy and sociology.

Since this program is being built upon existing courses, the Library believes it will be able to provide the material support needed for the creation of this BS. We are able to add whatever appropriate monographic needs might arise for the instructor. Our monographic holdings in the hard and social sciences, both of which are necessary for the success of this program, are good and any additional materials can be garnered though our library consortium (HELIN).

Access to journals in this field meets the needs of the course. Our online indexes and abstracts in the sciences and social sciences should more than meet the demands of this course. Access to reference databases such as ScienceDirect, Web of Science, the suite of ASFA databases, and the more general Academic Search Complete are available. We are unable to add any new journal titles except through a drop/add policy that requires the department to identify a journal title (of equal value) it would like to drop from its serials list to permit the addition of another. However, our current holdings in this field seem sufficient.

Therefore, the librarian believes that the Library can support, bibliographically, the needs of the students to be able to acquire the most out of this course.

Michael A. Cerbo II
Fisheries, Animal and Veterinary Sciences Bibliographer
12 November 2014

DATE: January 21, 2015

TO: Marta Gomez-Chiarri, Professor
Chair, Fisheries, Animal & Veterinary Sciences

FROM: Linda Barrett
Director, Budget and Financial Planning

SUBJECT: Review by the Budget and Financial Planning Office of the Proposal for a Bachelor of Science in Sustainable Agriculture and Food Systems

As requested in your email dated December 29, 2014, the Budget and Financial Planning Office has reviewed the proposal for the offering of a Bachelor Of Science Degree in Sustainable Agriculture and Food Systems.

According to the proposal, the Bachelor of Science Degree in Sustainable Agriculture and Food Systems will provide URI students with the skills and knowledge needed to contribute to sustainable development, production, harvesting, management, and utilization of terrestrial and aquatic microorganisms, plants and animals by society worldwide. The major will also allow its participants to explore the food chain along with placing an emphasis on sustainability, impacts on human health, and resilience from economic, environmental, and societal viewpoints. The core values of this interdisciplinary program that distinguish it from more traditional agriculture programs include an emphasis on the intrinsic value of heterogeneous scales of production and the greening of urban landscapes.

This program will utilize existing resources provided at URI by implementing the university's unique set of expertise in coastal food production, agriculture, nutrition and food science, community planning and design, engineering, environmental management and policy, resource economics, business, environmental anthropology and sociology.

The Budget and Financial Planning Office concurs that the Bachelor Of Science Degree in Sustainable Agriculture and Food Systems has no impact on the unrestricted budget as it has been presented.

Please let us know if you require any further information.

c:

J. Kirby	C. English
A. Veeger	N. Neff
C. Hinkson	D. Libutti
C. Robillard	L. Beauvais

THE
UNIVERSITY
OF RHODE ISLAND

THINK BIG WE DO

Joint Committee on Academic Planning Pre-Proposal for New Programs

Program Name: Sustainable Agriculture and Food Systems

Degree Type: B.S.

Proposer: Interdisciplinary group of faculty: Bengtson, English, Sullivan, Rice, Gorman, Gomez-Chiarri, Lofgren, Brown, Maynard, Smith, Sartini, Petersson, Pisa, Sproul, Greene, Pivarnik, Richard, Rivero-Hudec, Camberg

Department(s): FAVS, PLS, NFS, ENRE, SOC, PSY, CHE, AAF

College(s): CELS, A&S & Eng

Part 1. Briefly describe program.

[SEE ATTACHED]

Part 2. How does the program connect to the mission of the University and the strategic themes and goals of the Academic Plan?

[SEE ATTACHED]

Part 3. Signatures

Proposer: Anne Veeger - SAFS group contact Date: Digitally signed by Anne Veeger DN: cn=Anne Veeger, o=Associate Dean, ou=CELS, email=veeger@uri.edu, c=US Date: 2013.04.11 14:24:04 -04'00'

Chair(s): Richard Bn (CHE) Date: 4/9/13

Dean(s): Raymond M. Wright Date: 4.10.13

Dean(s): John Kirby Digitally signed by John Kirby DN: cn=John Kirby, o=University of Rhode Island, ou=College of the Environment and Life Sciences, email=jkirby@uri.edu, c=US Date: 2013.04.11 15:14:04 -04'00' Date:

Dean(s): Date: 4/25/13

JCAP Review Committee Response: Date:

We urge you to move the proposal forward for further development

We urge you to re-consider the proposed program

Comments:

JCAP Pre-Proposal: B.S. Sustainable Agriculture and Food Systems (SAFS) (2 pages total)
Part 1. Description of the Program

A major challenge the world faces today is the sustainable production of sufficient, accessible, and healthy food for a growing global population without further compromising natural resources for future generations[1,2]. Faculty from the College of Environment and Life Sciences (CELS), the College of Arts & Sciences (A&S) and the College of Engineering (EGR) propose a B. S. degree in ***Sustainable Agriculture and Food Systems (SAFS).*** URI's unique set of expertise in coastal food production, agriculture, nutrition and food science, community planning and design, engineering, environmental management and policy, resource economics, business, environmental anthropology, sociology, and global development will allow us to develop a pioneering integrated program. Students completing this program will graduate with the skills and knowledge needed to contribute to sustainable development, production, management, and utilization of terrestrial and aquatic microorganisms, plants and animals by society worldwide. The major will allow participants to explore the food chain, from farm to plate to waste and back, emphasizing sustainability, impacts on human health, and resilience from economic, environmental, and societal viewpoints. Core values of this interdisciplinary program that distinguish it from more traditional agriculture programs include an emphasis on the intrinsic value of heterogeneous scales of production (from small farms that sell directly to consumers to large scale producers),preserving local food cultures and biodiversity, and the greening of urban landscapes.

As a BS degree, SAFS will be an integrated interdisciplinary major drawing from sciences, engineering, nutrition, social sciences, and liberal arts to address questions of food supply, production and distribution, environmental justice, economics, public policy, community design and societal impact. Students will have a broad education complemented by a deep skill set.

SAFS students will: (A) contextualize challenges related to sustainability of agricultural production, food processing, marketing and distribution; (B) acquire competencies in addressing challenges, and (C) be positioned for employment or further study in a variety of sectors that focus on food production, food policy, human nutrition, and human and environmental health. Our graduates will be prepared to engage a wide range of agriculturally related issues such as population growth, climate change, food security, globalization, and the development of resilient plant and animal production systems, through self-directed learning, collaborative, interdisciplinary, and international comparative experience. This program will place unique emphasis on providing students with the skills to understand agriculture as a complex system and to be able to integrate multiple dimensions affecting food production and use from global to national to local and the interconnections[3]. Another innovative aspect of the URI SAFS program is the unique integration of terrestrial, freshwater, and marine systems. RI is an ideal setting for students to develop their skills through experiential (or applied) learning opportunities due to our size and commitment to local food movement, urban agriculture, and farmers' markets on a per capita basis.

The SAFS program will augment existing cross-disciplinary initiatives such as the Sustainability minor program, the University-wide sustainability initiative, and innovative Honors Program courses on the environment. In addition, given the evolving interdisciplinary clusters in Water Resources and Sustainable Energy at URI, the proposed SAFS major can contribute to the university-wide environmental research and teaching emphasis, and contribute to a renaissance and re-embracing of our Land Grant heritage and philosophy in the context of 21st century challenges[1,2,3].

Programmatically, SAFS students will pursue a curriculum that combines depth in a specialization area chosen from three tracks within the program (Food Systems; Nutrition & Food Safety; and Food

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[1]National Research Council of the National Academies. (2009). A New Biology for the 21st Century, National Academies Press, Washington, D.C. 98pp. (http://www.nae.edu/Publications/Reports/24908.aspx).
[2]The Agriculture and Food Research Initiative (AFRI) of the National Institute of Food and Agriculture of the US Department of Agriculture (NIFA-USDA)USDA leadership addresses challenges described inthe "New Biology for the 21st Century Report" by identifying five primary research funding priorities (http://www.csrees.usda.gov/funding/afri/afri_synopsis.html):1) Keep American agriculture competitive while ending world hunger; 2) Improve nutrition and end child obesity; 3) Improve food safety for all Americans; 4) Secure America's energy future, and 5) Mitigate and adapt to climate change"
[3]Human Capacity Development, The Road to Global Competitiveness and Leadership in Food, Agriculture, Natural Resources, and Related Sciences FANRRS, 2009.

Production) with breadth across the natural and social sciences, engineering, communication media, and the arts and humanities. Structurally this will entail a common two-course introductory sequence including an introductory sustainability course available to the general student body as a general education course, a flexible intermediate-level framework of courses drawn from existing, relevant classes related to agricultural production, engineering, economics, nutrition, community design, public policy, and impacts on society, along with a robust capstone experience. Integrated throughout will be conjoined emphases on critical reasoning and communication skills, scientific and quantitative methods, collaborative problem solving and experiential learning in multiple contexts including international study and internships. As the proposed major's foundation rests on existing curricular resources, a list of classes from CELS, A&S, EGR & CBA will be provided as part of the full proposal to the Curricular Affairs Committee. A few, targeted newly developed courses will provide an integration of the challenges and needs of food production, marketing, distribution, and consumption, as well as the opportunities that arise from a multi-trophic approach to growing, processing and delivering food. These courses will also strengthen existing undergraduate programs in the STEM and social sciences by opening the possibility of a minor in Sustainable Agriculture and Food Systems.

By the time of degree completion students will be uniquely poised to enter the workforce in the growing field of sustainable food systems or pursue graduate education/research opportunities. There is an emerging demand for knowledgeable workers in the area of food systems with awareness of the innovations in food policy and production that address the challenges of growing population and global change. Based on the environmentally concerned spirit of the times and students' current interest in courses dealing with the social, philosophical, scientific communication, and business aspects of environmental sustainability, we anticipate that the SAFS major will draw a considerable number of interested students especially those with aspirations and concerns for local food and food security.

Part 2: How does the Program connect to the mission of the University and the focus areas of the Academic Plan [AP]?

Synthesizing the SAFS program from CELS, A&S and EGR curricula will help fulfill the vision of the URI Academic Plan as it calls for "new emphases relevant to a broad meaning of liberal learning and scholarship for the 21st century" as well as curricula that develop "our distinctive strengths in ... environment/alternative energy/green economy [fields to] translate into learning and discovery that matters deeply in the world."

The proposed SAFS major directly answers several needs identified in the *Academic Plan.* In Section II, entitled *Prepare Students for a Changing World,* the AP specifically invites us to "Create interdisciplinary, team-based majors ... accessible through one or more colleges... while sustaining programs that deliver disciplinary strength (p.10, under *B. Enhance interdisciplinary courses and programs*)." Additionally, the goals of the SAFS program clearly align with Section I, entitled *Enhance Academic Quality and Value,* which encourages us to "Integrate teaching and research across the University that addresses challenges of the environment and examines aspects of advancing a green economy (p.3)." Embedded in the SAFS program is a course framework and a high value placed on experiential learning, as mentioned in the AP (Section II. C.) Students in the proposed program will benefit greatly from faculty research on a wide range of problems and opportunities related to environmental sustainability, honing critical reasoning skills, which will translate into systems thinking, critical inquiry, problem solving, and social engagement.

Finally, SAFS themes overlap with AP emphases on *Global Citizenry* (AP Section IV) as well as *Inclusion and Respect* (Section V). Social justice and equality function as a critical foundation in any sustainable agriculture system and green economy. These values will permeate the SAFS major, which will offer dynamic, transformative, and action-oriented approaches to solving global challenges in sustainable food production. Through exposure to a range of disciplines and modes of inquiry, students will construct their own understanding of the interplay of resource distribution and depletion, human policies and environmental choices, and the evolution of the Earth. The overarching goal of the Program is to enable students to strengthen their commitment to sustainable agriculture, human and environmental equity and healthy food as essential requirements for building and sustaining the quality of life for future generations, and grow as socially engaged citizens through their academic work at URI and beyond.

May 23, 2013

JCAP Review Committee Response to Interdisciplinary B.S. in Sustainable Agriculture and Food Systems, proposed by CELS, CAS, COE:

JCAP urges you to move the proposal forward for further development.

It is recommended that an administrative structure be well developed as the proposal is being prepared. The structure should 1) clearly inform students of the home department/college of the degree, and 2) guide students through the requirements regardless of their college or department of entry. JCAP has developed guidelines for interdisciplinary education and research that might be of assistance in fulfilling this recommendation (see link below). It also recommended that clear learning outcomes be developed that take into consideration the multiple and varied disciplines of origin from which students enter the degree. The program should include a comprehensive market analysis of true and full costs of production through consumption.

http://www.uri.edu/provost/documents/Interdisciplinray_Work_Recommended_Principles_for_Interdisciplinary.pdf

DATE: January 21, 2015

TO: Marta Gomez-Chiarri, Professor
Chair, Fisheries, Animal & Veterinary Sciences

FROM: Linda Barrett
Director, Budget and Financial Planning

SUBJECT: Review by the Budget and Financial Planning Office of the Proposal for a Bachelor of Science in Sustainable Agriculture and Food Systems

As requested in your email dated December 29, 2014, the Budget and Financial Planning Office has reviewed the proposal for the offering of a Bachelor Of Science Degree in Sustainable Agriculture and Food Systems.

According to the proposal, the Bachelor of Science Degree in Sustainable Agriculture and Food Systems will provide URI students with the skills and knowledge needed to contribute to sustainable development, production, harvesting, management, and utilization of terrestrial and aquatic microorganisms, plants and animals by society worldwide. The major will also allow its participants to explore the food chain along with placing an emphasis on sustainability, impacts on human health, and resilience from economic, environmental, and societal viewpoints. The core values of this interdisciplinary program that distinguish it from more traditional agriculture programs include an emphasis on the intrinsic value of heterogeneous scales of production and the greening of urban landscapes.

This program will utilize existing resources provided at URI by implementing the university's unique set of expertise in coastal food production, agriculture, nutrition and food science, community planning and design, engineering, environmental management and policy, resource economics, business, environmental anthropology and sociology.

The Budget and Financial Planning Office concurs that the Bachelor Of Science Degree in Sustainable Agriculture and Food Systems has no impact on the unrestricted budget as it has been presented.

Please let us know if you require any further information.

c:

J. Kirby	C. English
A. Veeger	N. Neff
C. Hinkson	D. Libutti
C. Robillard	L. Beauvais

THE
UNIVERSITY
OF RHODE ISLAND
THINK BIG WE DO
COLLEGE OF THE ENVIRONMENT AND LIFE SCIENCES

Memorandum

Date: December 29, 2014

To: Linda Barrett, Director, Budget & Financial Planning
Cheryl Hinkson, Associate Director, Budget & Financial Planning
Colleen Robillard, Budget Specialist, Financial Analysis

From: Marta Gomez-Chiarri, Professor and Chair, Department of Fisheries, Animal, and Veterinary Science

RE: Request for a Statement of No Financial Impact, new major in Sustainable Agriculture and Food Systems

Please find attached an abbreviated proposal for a new interdisciplinary major in Sustainable Agriculture and Food Systems (SAFS). As a BS degree, SAFS will be an integrated interdisciplinary major drawing from existing courses in sciences, engineering, nutrition, social sciences, and liberal arts to address questions of food supply, harvesting, production and distribution, environmental justice, economics, public policy, community design and societal impact. Students will have a broad interdisciplinary education complemented by a deep skill set in the chosen area of specialization (options in Food Production, Nutrition and Food, and Food and Society).

By the time of degree completion students will be uniquely poised to enter the workforce in the growing field of sustainable food systems or pursue graduate education/research opportunities. There is an emerging demand for knowledgeable workers in the area of food systems with awareness of the innovations in food policy and production that address the challenges of food security for a growing population during an era of global change.

This new major relies on resources (faculty and facilities) that already exist in the budget of the participating departments and colleges, with most of the departments being located in the College of the Environment and Life Sciences.

Please do not hesitate to contact me at gomezchi@uri.edu or 401-874-2917 if you have any questions about the proposal. Looking forward to hearing from you.

THE
UNIVERSITY
OF RHODE ISLAND

THINK BIG WE DO

Academic Program Proposal Cover Page

1. Name/Contact Information: Marta Gomez-Chiarri

2. Originating from (please fill in all that apply):

Fisheries, Animal and Vet Sci (Department) CELS (School/College) (Division)

3. Program type: Undergraduate ☑ (attach Curriculum Sheet) Graduate ☐ (attach List of Requirements)

4. Proposing **New** ☑ or **Change** ☐ to the following (see **Instructions** for definitions): (select all that apply)

Department: ☐ Degree: ☑ Program: ☑ Major: ☑ Sub plan: ☐ (option, track, concentration) Other: ☐

Title/name of proposed Department:

Title/name of proposed Degree: Bachelor of Science in Sustainable Agriculture and Food Systems

Title/name of proposed Program: Sustainable Agriculture and Food Systems

Title/name of proposed Major: Sustainable Agriculture and Food Systems

Classification of instruction program (CIP) code: CIP Index 0101

Title/name of proposed Sub plan:

CIP code (if different from above): CIP Index

Other:

5. Proposed Degree(s) (BS, BA, BFA, MA, MS, Ph.D, etc.): BS

6. Intended initiation date: Term Fall Year 2015

7. Anticipated date of granting first degree: August 2019

8. Intended location of program: Kingston ☑ Providence ☐ Narragansett Bay Campus ☐

9. Total Credits Required for Graduation: (120, 130, etc) 120

10. Certification/Licensing Requirements: Yes ☐ (provide brief description) No ☑

Office Use Only:
College Curriculum Committee _____Curricular Affairs Committee _____ Graduate Council _____
Faculty Senate _____ President _____ RIBGHE _____ Enrollment Services _____