The University of Georgia

College of Agricultural and Environmental Sciences
Office of the Dean and Director

December 23, 2014

Dr. Pamela Whitten
Senior Vice President for Academic Affairs and Provost
Administration Building
University of Georgia
CAMPUS

Dear Provost Whitten,

I am pleased to provide this letter of support for the proposed Interdisciplinary Certificate in Sustainability. The College of Agricultural and Environmental Sciences remains committed to improving lives by promoting economic viability and global competitiveness of Georgia agriculture, fostering environmental stewardship and wise management of natural resources, and ensuring the production, processing and distribution of safe food and fiber. The Interdisciplinary Certificate in Sustainability compliments our existing degree programs and provides additional opportunities for interdisciplinary and experiential teaching and learning.

The Certificate in Sustainability will prepare students for effective leadership, enhancing knowledge and understanding of the complex interactions between human and environmental systems. Students will cross disciplinary divides and learn to approach problems holistically, integrating social, economic, and environmental concerns as they apply their knowledge. Completion of this credential will help to further distinguish outstanding UGA students as they pursue next steps in their academic and professional careers.

The College of Agricultural and Environmental Sciences is committing $1,500 per year for three years to help launch the Interdisciplinary Certificate in Sustainability, and Ms. Susan Varlamoff will represent CAES on the program's Advisory Board. We are pleased to confer the Certificate in Sustainability to students who successfully complete its requirements.

Sincerely,

J. Scott Angle

for J. Scott Angle SMV,
Dean

101 Conner Hall • Athens, Georgia 30602-7501
Telephone 706-542-3924 • Fax 706-542-0803 • caesdean@uga.edu
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College of Environment and Design

24 December 2014

Dr. Pamela Whitten
Senior Vice President for Academic Affairs and Provost
Administration Building
University of Georgia
CAMPUS

Dear Provost Whitten,

I fully support the proposed Interdisciplinary Certificate in Sustainability because it fits so well with many College of Environment and Design sustainable planning and design initiatives. The Interdisciplinary Certificate in Sustainability compliments existing degree programs in CED, such as our BLA, MLA, MEPD, and MHP, as well as many others at UGA. It will also provide our students and many other students across the campus with additional opportunities for interdisciplinary teaching and learning.

The Certificate in Sustainability will help prepare students for effective leadership and directly connect to the new university-wide focus on experiential learning. Each student in the certificate program will receive an enhanced understanding of the complex interactions between human and environmental systems. They will also cross disciplinary divides and learn to approach problems holistically, integrating social, economic, and environmental concerns as they apply their knowledge. Completion of this credential will help to further distinguish our outstanding students as they pursue next steps in their academic and professional careers.

The College of Environment and Design is pleased to support the Interdisciplinary Certificate in Sustainability by committing $1,500 per year for three years, providing a representative to serve on the Advisory Board, conferring the Certificate in Sustainability to students who successfully complete its requirements, and offering a general commitment of involvement as the program grows and evolves over the next several years.

Best regards,

Daniel J. Nadenicek, Dean and
Draper Chair in Landscape Architecture

Athens, Georgia 30602 • Telephone 706-542-1816 • Fax 706-542-4485
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The University of Georgia
College of Engineering

January 5, 2015

Dr. Pamela Whitten
Senior Vice President for Academic Affairs and Provost
Administration Building
University of Georgia
CAMPUS

Dear Provost Whitten,

I am pleased to provide this letter of support for the proposed Interdisciplinary Certificate in Sustainability. The College of Engineering is committed to preparing students to engage in critical issues through careers in leadership and professional practice, and address the challenges facing society with collaborative research in technologies and concepts that will transform Georgia, our nation and our world. The Interdisciplinary Certificate in Sustainability will complement our existing degree programs and provide students with valuable opportunities for interdisciplinary teaching and learning.

The Certificate in Sustainability will help prepare students for effective leadership through experiential learning and enhanced understanding of the complex interactions between human and environmental systems. Students will cross disciplinary divides and learn to approach problems holistically, integrating social, economic, and environmental concerns as they apply their knowledge. Completion of this credential will help to further distinguish our outstanding students as they pursue next steps in their academic and professional careers.

The College of Engineering is pleased to help launch the Interdisciplinary Certificate in Sustainability by committing $1,500 per year, starting in FY16, for three years, as well as appointing a representative to serve on the Advisory Board. We look forward to conferring the Interdisciplinary Certificate in Sustainability to students who successfully complete its requirements.

Sincerely,

Donald J. Leo, Ph.D.
Dean
UGA Foundation Professor in Engineering

Room 130 Paul D. Coverdell Center • Athens, Georgia 30602 • (706) 542-1653 • FAX (706) 542-8806
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The University of Georgia

Linda Kirk Fox
Dean

College of Family & Consumer Sciences
Office of the Dean

224 Dawson Hall
Athens, Georgia 30602-3622
Telephone (706) 542-4879
Facsimile (706) 542-4862
Web page www.fcs.uga.edu

December 23, 2014

Dr. Pamela Whitten
Senior Vice President for Academic Affairs and Provost
Administration Building
University of Georgia
CAMPUS

Dear Provost Whitten,

I am pleased to provide this letter of support for the proposed undergraduate Interdisciplinary Certificate in Sustainability. The College of Family and Consumer Sciences is committed to advancing the well-being of individuals and families over their life span and strengthening communities through the generations. The Interdisciplinary Certificate in Sustainability complements existing degree programs in housing and interiors, in health and food systems, in merchandising and consumer economics policy and individual decision making at FACS and provides students with valuable opportunities for interdisciplinary teaching and learning.

The Certificate in Sustainability will help prepare students for effective leadership through experiential learning and enhanced understanding of the complex interactions between human and environmental systems. Students will cross disciplinary divides and learn to approach problems holistically, integrating social, economic, and environmental concerns as they apply their knowledge. Completion of this credential will help to further distinguish our outstanding students as they pursue next steps in their academic and professional careers.

The College of Family and Consumer Sciences is pleased to help launch the Interdisciplinary Certificate in Sustainability by appointing a representative to serve on the Advisory Board. We look forward to conferring the Interdisciplinary Certificate in Sustainability to students who successfully complete its requirements.

Sincerely,

Linda Kirk Fox

Linda Kirk Fox, Ph.D.
Dean

C: Silvia Giraudo, Assoc. Dean for Academic Programs

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An Equal Opportunity/Affirmative Action/Veteran/Disability Institution

January 2, 2014

Dr. Pamela Whitten
Senior Vice President for Academic Affairs and Provost
Administration Building
University of Georgia
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Dear Provost Whitten,

I am pleased to provide this letter of support for the proposed Interdisciplinary Certificate in Sustainability. The Franklin College of Arts and Sciences is committed to exploring research opportunities and creative endeavors that illuminate the human condition and create a foundation for improved well-being and quality of life. The Interdisciplinary Certificate in Sustainability complements existing degree programs at Franklin and provides students with valuable opportunities for interdisciplinary teaching and learning.

The Certificate in Sustainability will help prepare students for effective leadership through experiential learning and enhanced understanding of the complex interactions between human and environmental systems. Students will cross disciplinary divides and learn to approach problems holistically, integrating social, economic, and environmental concerns as they apply their knowledge. Completion of this credential will help to further distinguish our outstanding students as they pursue next steps in their academic and professional careers.

Franklin College is pleased to help launch the Interdisciplinary Certificate in Sustainability by committing a minimum of $1,500 per year, for three years. A Franklin College representative will also be appointed to serve on the Advisory Board. We look forward to conferring the Interdisciplinary Certificate in Sustainability to students who successfully complete its requirements.

Sincerely,

Hugh Ruppersburg
Senior Associate Dean

December 24, 2014

Dr. Pamela Whitten
Senior Vice President for Academic Affairs and Provost
Administration Building
University of Georgia
CAMPUS

Dear Provost Whitten,

I am pleased to provide this letter of support for the proposed Interdisciplinary Certificate in Sustainability. The Odum School of Ecology remains committed to excellence in holistic ecosystem ecology and interdisciplinary sustainability research, education and service. This certificate is a valuable addition to the University of Georgia's curricular offerings, serving to expand and support existing degree programs through integrative and experiential teaching and learning.

The Certificate in Sustainability will prepare students for effective leadership, supplementing existing majors with enhanced knowledge and understanding of the complex interactions between human and environmental systems. Students will cross disciplinary divides and learn to approach problems holistically, integrating social, economic, and environmental concerns as they apply their knowledge. Completion of this credential will help to further distinguish outstanding UGA students as they pursue next steps in their academic and professional careers.

The Odum School is pleased to join with other colleges and schools at UGA to help launch the Interdisciplinary Certificate in Sustainability by committing $1,500 per year for three years, designating a representative to serve on the Advisory Board, and conferring the Certificate to students who successfully complete its requirements.

Sincerely,

John L. Gittleman
Dean and UGA Foundation Professor in Ecology

The University of Georgia

School of Social Work
Office of the Dean

January 2, 2015

Dr. Pamela Whitten
Senior Vice President for Academic Affairs and Provost
Administration Building
University of Georgia
CAMPUS

Dear Provost Whitten,

I am pleased to provide this letter of support for the proposed Interdisciplinary Certificate in Sustainability. The School of Social Work is committed to preparing culturally competent practitioners and scholars to be leaders in addressing persistent and emerging social problems through practice, research, and policy. The Interdisciplinary Certificate in Sustainability would complement existing programs at UGA and provide our students with valuable opportunities for interdisciplinary teaching and learning.

The Certificate in Sustainability will help prepare students for effective leadership through experiential learning and enhanced understanding of the complex interactions between human and environmental systems. Students will cross disciplinary divides and learn to approach problems holistically, integrating social, economic, and environmental concerns as they apply their knowledge. Completion of this credential will help to further distinguish our outstanding students as they pursue next steps in their academic and professional careers.

The School of Social Work is pleased to help launch the Interdisciplinary Certificate in Sustainability by committing $1,500 per year for three years and appointing a representative to serve on the Advisory Board. We look forward to conferring the Interdisciplinary Certificate in Sustainability to our students who successfully complete its requirements.

Sincerely,

Maurice C. Daniels
Dean

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The University of Georgia
Terry College of Business

Daniel C. Feldman
Senior Associate Dean &
Synovus Chair of Servant Leadership

Athens, Georgia 30602
Telephone 706-542-9387
dfeldman@uga.edu

December 22, 2014

Dr. Pamela Whitten
Senior Vice President for Academic Affairs and Provost
Administration Building
University of Georgia
CAMPUS

Dear Provost Whitten:

I am pleased to provide this letter of support on behalf of the Terry College of Business for the proposed Interdisciplinary Certificate in Sustainability. Sustainability is an area of growing interest in the Terry College of Business and there are several units in the college in which faculty have already engaged in sustainability research and teaching (e.g., Real Estate, Risk Management, Economics, and Management Information Systems). This certificate program will provide greater opportunities for Terry students to take more formal and interdisciplinary coursework in the area.

Dean Ayers and I met with Kevin Kirsche about Terry's participation in the certificate program a few weeks ago, and we are committing $1,500 per year for three years to help launch this initiative. Dr. Maric Boudreau will serve as the college's representative on the Advisory Board. We will also be happy to confer the Interdisciplinary Certificate in Sustainability to those Terry students who successfully complete its requirements.

Sincerely,

Daniel C. Feldman

Daniel C. Feldman
Senior Associate Dean
Synovus Chair of Servant Leadership

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The University of Georgia

Daniel B. Warnell School of Forestry and Natural Resources
Forestry, Fisheries and Wildlife, Water and Soil Resources,
Natural Resource Recreation and Tourism
Office of the Dean

January 5, 2015

Dr. Pamela Whitten
Senior Vice President for Academic Affairs and Provost
Administration Building
University of Georgia
CAMPUS

Dear Provost Whitten,

I am pleased to provide this letter of support for the proposed Interdisciplinary Certificate in Sustainability. The Warnell School of Forestry and Natural Resources is committed to preparing leaders in the conservation and sustainable management of forests and other natural resources; to discover ways to restore and better use the earth's natural resources; and to put into practice forestry and natural resources knowledge. The Interdisciplinary Certificate in Sustainability would complement existing degree programs in our college and provide our students with additional opportunities for interdisciplinary teaching and learning.

The Certificate in Sustainability will help prepare students for effective leadership through experiential learning and enhanced understanding of the complex interactions between human and environmental systems. Students will cross disciplinary divides and learn to approach problems holistically, integrating social, economic, and environmental concerns as they apply their knowledge. Completion of this credential will help to further distinguish our outstanding students as they pursue next steps in their academic and professional careers.

The Warnell School of Forestry and Natural Resources is pleased to help launch the Interdisciplinary Certificate in Sustainability by committing $1,500 per year for three years (FY 16/17/18) and appointing a representative to serve on the Advisory Board. We look forward to conferring the Interdisciplinary Certificate in Sustainability to our students who successfully complete the requirements.

Sincerely,

W. Dale Greene
Interim Dean and Professor

Athens, Georgia 30602-2152
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An Equal Opportunity/Affirmative Action Institution

INTERDISCIPLINARY CERTIFICATE PROGRAM PROPOSAL
CERTIFICATE IN SUSTAINABILITY

I. Basic Information

Institution: University of Georgia **Date:** July 22, 2015

School/College: Franklin College of Arts and Sciences and other participating schools / colleges

Department/Division: Dean's Office from each participating school / college

Certificate Title: Certificate in Sustainability

Level: Undergraduate (Graduate Certificate will be submitted separately)

Proposed starting date for program: Fall 2015

Abstract for the program:

Increasingly, human and ecosystem challenges require sustainable solutions that recognize the interconnection between environmental limits and human values and well-being. The University of Georgia (UGA), in their 2020 Strategic Plan, outline four specific Strategic Directions to which this certificate will directly respond. The Certificate in Sustainability will enhance opportunities for integrative, applied learning in interdisciplinary settings as well as prepare students to address difficult global sustainability issues. The certificate will also work towards the University's goal of incorporating sustainability into formal educational opportunities. Students across campus will benefit from an understanding of the framework of sustainability and an opportunity to apply skills and learning to real world solutions.

II. Purpose and Educational Goals

Purpose

Human and ecosystem challenges require sustainable solutions that recognize the interconnection between environmental limits and human well-being. In order to achieve a healthy, equitable society while maintaining earth's basic systems, we must cross disciplinary divides and infuse sustainability principles into every discipline. Students must learn to approach problems holistically and integrate social, economic, and environmental concerns as they apply their knowledge.

Leadership in sustainability research, education, and service is a "hallmark" of The University of Georgia's 2020 Strategic Plan. Strategic Direction I emphasizes "knowledge of human cultures and the physical and natural world" through "integrative and applied learning." Strategic Direction II calls for graduate programs that "meet increasingly complex societal needs with cutting-edge, interdisciplinary offerings." Strategic Direction III foresees enhanced interdisciplinary research to address "immediate issues as well as 'grand challenge' problems" such as "safe and sufficient supplies of food and water, poverty and social justice, education, global health, environmental degradation, world financial stability, national security, and sustainable energy." Strategic Direction VII states that "sustainability should be infused into formal and informal educational opportunities throughout the university."

The Certificate in Sustainability responds to Strategic Plan priorities explicitly by preparing students for effective leadership on campus and beyond. It supplements existing majors with knowledge of the complex interactions between human and environmental systems. Students will be introduced to a breadth of sustainability issues, systemic limits, and the triple bottom line (equity, environment, economy), to support their professional development. Students across campus will benefit from an understanding of the framework of sustainability and an opportunity to apply skills and learning to real world solutions.

Broad Objectives

As a result of this certificate, students of any discipline will be able to:

I. Demonstrate understanding of foundational sustainability concepts.
    a. Met by: Anchor course, pillars, seminar, capstone course
II. Apply systems thinking and interdisciplinary education to sustainability challenges.
    a. Met by: Anchor course, seminar, and capstone course
III. Apply academic knowledge to real world problems inside and outside of the classroom.
    a. Met by: Capstone course
IV. Earn a credential that supports their existing discipline.
    a. Met by: Pillars
V. Facilitate service learning and community partnership.
    a. Met by: Capstone course and seminar

VI. Initiate interdisciplinary communication between fellow students, faculty, and staff through the annual seminar and implementation of projects and research.
    a. Met by: Anchor course, seminar, pillars, capstone course

Specific Objectives

As a result of this certificate, students of any discipline will be able to:

I. Apply systems thinking to real-world problems through knowledge of social, economic, and ecological systems, including limits and interdependence.
    a. Met by: Anchor course, three pillars, seminar, and capstone course
II. Demonstrate knowledge of human cultures and their interaction with the natural and physical world.
    a. Met by: Pillars, capstone course
III. Find sustainable solutions to human-ecosystem challenges.
    a. Met by: Seminar, pillars, capstone course
IV. Develop interdisciplinary knowledge and an understanding of the interconnectedness of sustainability challenges that transcends academic disciplines.
    a. Met by: Anchor course, three pillars, seminar, and capstone course
V. Apply problem-solving skills and knowledge to place-based, real world sustainability challenges.
    a. Met by: Capstone course
VI. Gain a local and global intercultural and intergenerational perspective that nurtures empathy, awareness, and respect.
    a. Met by: Anchor course, seminar, three pillars, capstone course
VII. Understand the complexity of relationships within and across communities.
    a. Met by: Anchor course, seminar
VIII. Build an informed, ethical, and scholarly sense of citizenship
    a. Met by: Anchor course, three pillars, seminar, and capstone course

III. Interdisciplinary nature of the proposed program

Sustainability inherently embraces many disciplines, methodologies, and institutional practices. Students enrolled in the certificate program will gain knowledge that addresses both human and ecological systems by requiring courses from different pillars of sustainability (social, economic, environmental) and providing them with opportunities to develop inter- and trans-disciplinary projects and solutions. To achieve this, the program will involve multiple schools and colleges at UGA and has the potential to include any discipline on campus. Both the anchor course and the seminar will draw from faculty expertise in many colleges and schools. The certificate pillars will allow students to explore sustainability through multiple lenses, enabling them to view sustainability problems holistically.

IV. Expected Enrollment

Twenty students are expected to enroll in the first semester, followed by increases in each semester thereafter. Fifty students are expected to enroll by year three.

V. Why this program is necessary

Sustainability is one of the biggest challenges facing our society. Meeting needs of the present without compromising the ability of future generations to meet their needs will require an understanding of the complex interactions between humans and environmental systems. It requires a workforce willing to look outside traditional disciplines for creative, holistic solutions. Sustainability is a process rather than a product, thus requiring trans-disciplinary thinking and opportunities for experiential learning.

The Certificate in Sustainability will provide students with the knowledge and skills they will need to contribute to a more sustainable future. The program will help students become effective leaders and agents of change for sustainability in a wide range of vocations. Such vocations may be researcher, teacher, corporate officer, technology specialist, business owner, farmer, nonprofit manager, or government official.

This certificate also places UGA at the forefront of efforts nationwide to expand curricular sustainability offerings, making graduates more competitive to employers. A 2014 survey of 10,116 college applicants by the *Princeton Review*[1] determined that 61 percent of respondents would value having information about a college's commitment to the environment and 23 percent said such information would impact their decision to apply to or attend the school.

Similarly, Indeed.com[2], a website where employers post job openings, saw the number of job postings containing the keyword "sustainability" increase over the past decade. The graph below presented by Indeed displays the increase in sustainability-related jobs. The Certificate in Sustainability would prepare students for the increasing number of careers in sustainability.

In addition, senior executive sustainability officers have increased dramatically in recent years. From 2004 to 2011, 29 U.S. companies added Chief Sustainability Officers (CSO), according to one report[3]. Many more companies have similar positions at director levels. Forbes Magazine in May 2012 listed "Sustainability Expert" as one of 10 jobs on the rise that did not exist 10 years ago[4].

In September 2013, U.S. News and World Report came out with "11 Hot College Majors" and named Sustainability as number 11. The article stated that companies of all types seek to reduce waste, increase efficiency, and reduce pollution[5].

A study[6] conducted at The Georgia Institute of Technology, through the VIRTUES program, surveyed 185 Georgia companies and governments in 2013 about workforce education and training for sustainability. Fifty percent of the 101 companies who answered the question, "What are the hard skills related to sustainability that your organization finds the most challenging to fulfill?" indicated "critical thinking (including concepts like systems thinking, cradle to cradle, or lean manufacturing)." Of the 101 who answered the question, "What soft skills related to sustainability that your organization finds the most challenging to fulfill?" 56% said "creativity in problem solving". Clearly, there is a need for graduates who are able to think systemically and creatively in any career. The Certificate in Sustainability would prepare students to address global issues and encourage them to develop a global mindset.

VI. Additional Information

1. **Program Initiation:** Summer 2015
2. **Full Implementation of Program:** Fall 2015
3. **First Certificates:** Spring 2016
4. **Annual Number of Expected Graduates:** 20 (first year), 50 (by third year)
5. **Projected Future Trends:** Continued increase in student enrollment

1. **Documentation of student interest in the program**

A growing number of UGA students have expressed interest in economic, social, and environmental issues concerning sustainability. Students have created and joined numerous environmental groups on campus that promote and foster sustainability, including the Go Green Alliance (GGA), an umbrella organization for sustainability focused groups on campus, and a separate sustainability committee in the student-run Residence Hall Association.

In 2010, the GGA developed and promoted a $3.00 "green" fee to help support sustainable practices on campus. With overwhelming student support, this green fee passed and helped fund the Office of Sustainability. The Office of Sustainability was created in February of 2010 to support and coordinate environmental and sustainable efforts on campus.

Demonstrating the growing student interest in hands-on sustainability projects, the Office of Sustainability consistently receives more applicants for student internships, from disciplines across campus, than there are positions available.

Graduate and undergraduate advisors at UGA have documented growing interest in sustainability in a fall 2012 survey. Six out of six faculty advisors indicated that their students had expressed an interest in sustainability courses. Five out of six indicated that this interest has increased in recent years, and four out of six stated that their students are interested in sustainability related careers.

In a September 2014 survey of 197 undergraduate and graduate students from 63 different majors at UGA, 62% indicated that they would consider completing a Certificate in Sustainability to complement their degree. Additionally, 56% said that sustainability related to their intended career. In a similar 2012 survey the following quotes were gathered, expressing student interest:

> *"I was thrilled to hear about this new opportunity that could soon be available to UGA students. As a Public Relations major, I fall outside of the typical audience for green initiatives and sustainable practices. However I realize the importance of this issue in the local, national and international community, which is why I'm so interested in the topic...So many companies are making an effort to become green. In fact, sustainability is becoming a factor in the decision making process among C-suite executives, further validating its importance. Offering this certificate to*

students will better equip UGA grads to the changing nature of business." Will Linto, Grady College of Journalism

"The Certificate in Sustainability would better prepare future graduates for the marketplace as well as the workforce, allowing them to remain on the cutting edge of sustainable techniques. As a major research institution with its roots in agriculture, the University of Georgia could only profit from the proposed Certificate in Sustainability, through fostering better relations across disciplines, giving back more to the Athens' community, and advancing sustainability practices to improve the quality of life worldwide and across species." Elizabeth Rockwell, English

2. **Evidence of student demand sufficient to sustain reasonable enrollments**

Students across campus have expressed interest in supplementing their degrees with certification in sustainability (See survey results above). In the above-mentioned survey of academic advisors, all stated that their students would be interested in a certificate in sustainability. Over 60% of the students surveyed likewise expressed an interested in a certificate in sustainability. This growing interest is likely to continue in reaction to the increasing career opportunities in sustainability.

- **Minority student enrollments:** The intent of the Certificate in Sustainability is to attract students from every discipline across UGA. Participation in this interdisciplinary certificate which focuses on economics, environment, and social equity may enhance recruitment of a diverse student body. Efforts will be made to recruit students from many backgrounds.

VII. Detailed Information

1. **Curriculum Outline:** (See Appendix A).

The curriculum for the Certificate in Sustainability requires 17 credit hours. These hours include an anchor course (3 credits), one course from each "pillar" (social, ecological, economic) (9 credits), a required yearlong seminar (2 credits), an approved application project (3 credits), and a portfolio that ties these requirements together (completed as a part of the application project course. The seminar course will begin with a historical and foundational background in sustainability, move into the science, economic, and social aspects of sustainability, and introduce various sustainability challenges including climate change, biodiversity, energy and the built environment. Students will also be required to present information and updates related to their application project during one meeting of the seminar. The three pillars, from which students will select one course each, represent the widely recognized three pillars of sustainability: environment, society, and economy (see Appendix B).

2. **Model programs, accepted disciplinary standards, and accepted curricular practices**

At UGA, the most similar models to the Certificate in Sustainability (CS) for undergraduates are the Local Foods Systems (LFS) Certificate and the Environmental Ethics Certificate (EEC).

The LFS Certificate requires all students enrolled to take basic required courses and then choose from a "cluster area of focus" in one of three areas. The CS will require students to select one course from each pillar instead of choosing just one focus area which, along with the seminar and the anchor course, will ensure an adequate foundation in all the three pillars of sustainability.

The EEC is awarded to students who successfully complete at least 18 hours of course work, including at least 7 credit hours in core courses (one 3-or 4-hour course in ecology, one 3-hour course in ethics, and one 1-hour course in environmental ethics seminar), 7 or 8 hours in approved elective courses, and 3 hours for an approved research paper in environmental ethics.

There are over 40 minors in sustainability at other institutions in the United States. There are at least 15 certificate programs at the undergraduate and graduate level. Some of these schools include Penn State, the University of Iowa, the University of Utah, and the University of Wisconsin. The requirements of these programs are similar. For example, the University of Utah Sustainability Certificate was initiated in 2012 and requires 23 credit hours with one required introductory course, one final project, and 15 hours of electives.

3. **Program accreditation**

No formal accreditation standards currently exist for the area of sustainability. The proposed UGA Certificate in Sustainability is unique to UGA, but is similar to several other programs (listed above).

4. **Faculty resources**

The Director of the Certificate in Sustainability will provide instructional support for the program. This includes:

1) Coordinate course offerings and maintain student records
2) Coordinate and promote activities (seminars, speakers, receptions) associated with the program and do whatever is appropriate to secure extramural funding lines to support program activities).
3) Consult with the Advisory Committee on matters of policy, planning and course requirements.

Buy-out of one unit per year, or ideally one unit per semester, is needed for the Director. Administrative staff at CICR is needed to assist the Director with administration of the

certificate program, management of the faculty advisory board, course approvals and maintaining student records. An intern at the Office of Sustainability will work 10 hours per week to help establish program logistics and develop communications and outreach materials during years one and two of the program.

Additional faculty will serve on the Advisory Board to oversee the program, approve new courses, oversee disbursement and use of program funds, and revise program requirements over time. The Advisory Board will be comprised of representatives from each conferring college, the Center for Integrative Conservation Research, Office of Sustainability, the Director, and additional faculty chosen as needed by the Director, CICR and OoS to provide balanced representation from each area of sustainability (economic, social, and ecological). Board members will serve two-year renewable terms.

The Certificate includes a seminar series that will be run by the Director with support from the Office of Sustainability and the Center for Integrative Conservation Research. The Certificate will also have a Faculty Affiliate program made up of faculty teaching coursework or overseeing projects or internships used to complete the certificate. These faculty may also serve as guest speakers during the seminar series and anchor course. (For a potential list of faculty affiliates, see Appendix D.)

5. **Additional faculty needed**

   No additional faculty are needed.

6. **Library, computer, and other instructional resources needed**

   Current resources are adequate to support the Certificate in Sustainability so long as current resources do not decrease.

7. **Physical facilities necessary to fully implement the program**

   No additional physical facilities are needed for the implementation of the certificate.

8. **Building, classroom, laboratory, and office space**

   No additional facilities are needed for the implementation of the certificate. (Existing office space will be utilized for the Certificate Director.)

9. **Expense to the institution (including personnel, operating, equipment, facilities, library, etc.) required to fully implement the program**

   The Certificate in Sustainability will be administered by existing staff in the Center for Integrative Conservation Research and the Office of Sustainability. The program will require one course credit buyout time for the Director per year or ideally one

buyout per semester, stipends for two student interns at the Office of Sustainability, and funding for outreach materials.

Item	Amount	Source	Details
Director Buyout	$4,320	Franklin College	One course credit Buyout for the Director of the Certificate
Outreach	$1,000	Provost* Participating Colleges	Bus Placards, posters, web development
Intern Office of Sustainability (Years 1-2 only)	$4,000	Provost*	$1500/semester for an intern at the Office of Sustainability to assist in setting up the structure for the certificate. This will include developing communications and outreach materials, communicating with undergraduate advisors, working with the Director and CICR to establish procedures for submitting application project proposals and portfolios and tracking progress, etc.
Staff CICR	$4,680	Participating Colleges	Funding for staff to assist the director in managing student records, coordinate logistics (room and speakers) for the seminar series, schedule and take minutes at Advisory Board Meetings, and other tasks.

*Projected Expenses include startup funding from UGA Provost's Office for Years 1-2 only.

10. **Extent of student support (fellowships, assistantships, scholarships, etc.) available for this program**

    No fellowships, assistantships or scholarships are available for the Certificate in Sustainability. However UGA students can apply annually for sustainability grants through the Office of Sustainability to fund sustainability research and applied projects.

11. **Commitments of financial support needed**

    The annual cost to administer the Certificate is a minimum of $10,000. Additional start-up funding has been requested of the Provosts' office in the amount of $5,000 per year for 2 years to support development of the Certificate program. Multiple UGA colleges are committed to confer the certificate and provide $1,500 or more per year for three years, with participation to be re-evaluated after that time. Participating colleges include College of Agricultural and Environmental Sciences, Franklin

College of Arts and Sciences, Terry College of Business, Odum School of Ecology, College of Environment and Design, College of Family and Consumer Sciences, Warnell School of Forestry and Natural Resources, School of Social Work, and others. Funding that exceeds the minimum necessary requirements for certificate administration will be used to support programs that enhance teaching and learning related to the certificate program. Disbursement and use of certificate funds shall be determined by the Advisory Board.

Potential Program Enhancements Pending Available Funding**

Item	Amount	Source	Details
Seminar Series	$1,000	Participating Colleges	Funds to support the seminar series
Annual Speaker	$1,000-5,000	Participating Colleges	Funds to support one invited speaker per year
Semester in Review Event	$1,500	Office of Sustainability	Event at the end of each semester where students present a poster or display of their application project.
Faculty Development Grants	$500 per grant	Participating Colleges	Grants would provide funds to selected faculty to create or support Anchor course offerings or other efforts that support certificate objectives. Money could be used for course development, travel, speakers, etc.
Faculty Affiliate Program Events	$1,000	Participating Colleges + Office of Sustainability	An event held at the beginning of each year (similar to our past breakfasts) that bring together Faculty Affiliates of the Certificate to share opportunities and challenges.
Faculty Development Workshops	Up to $12,500	Participating Colleges + Office of Sustainability	Funds will support the Faculty Development Workshop aimed at integrating sustainability into the curriculum at UGA. New courses developed could satisfy certificate tracks.
Increased Director Buyout	$4,000+	Participating Colleges	Additional course buyout for program director as needed to support participating students.

** Disbursement and use of certificate funds shall be determined by the Advisory Board.

12. **Administration of the program**

The Certificate in Sustainability will be conferred by multiple colleges and schools, including Odum School of Ecology and others (College of Agricultural and Environmental Sciences, Franklin College of Arts and Sciences, Terry College of Business, College of Environment and Design, College of Family and Consumer Sciences, Warnell School of Forestry and Natural Resources, School of Social Work).

The Director, with the assistance of an intern, will review student applications to the program, advise students as they make progress, maintain appropriate student records, coordinate the seminar series (including student evaluation), support and evaluate the monitoring of student capstone projects or internships, and complete all necessary paperwork for the Registrar. The Director will also lead meetings of the Faculty Advisory Board.

The Faculty Advisory Board will serve as the certificate steering committee and will meet as needed (at least once a semester) to support and advise the Director of the program.

One chief task of the Board will be to review courses for inclusion in the certificate. The process for inclusion will be as follows: faculty will submit an application to the Director for inclusion of the course in the certificate; the application will include a brief statement of how the course addresses sustainability, the faculty member's area of expertise and research, and a syllabus. The Director will review the application and forward it to the Board, which when gathered will vote on the application. The Board will periodically review courses previously submitted to make sure their inclusion in the Certificate remains appropriate.

Other responsibilities of the Board include selecting the program Director, advising the Director regarding student capstone projects and internships as needed, overseeing disbursement and use of Certificate program funds, and generally serving as ambassadors of the Certificate, encouraging students, recruiting faculty participation, and periodically attending or presenting at the Certificate seminar.

13. **Technical Support Needed**

Technical support and office space will be provided to the Director by his or her home department. Existing staff in the Center for Integrative Conservation Research and the Office of Sustainability receive technical support from their respective units.

14. **Degree to which that structure is in keeping with good practice and accepted standards**

This is similar to the other certificates currently on campus, particularly including administration of the Certificate in Obesity and Weight Management.

15. **How and by what criteria students will be admitted to and retained in the program and how these procedures are consistent with accepted standards for effective and successful programs**

Students may apply for acceptance into the Certificate in Sustainability program at any point during their course of study. Students will complete an application, which will include a proposed course of study, to the Director for approval. Students in good

standing at the University who have completed the application will be accepted and retained, provided they make good progress toward completion of the certificate.

Effective changes in student knowledge and understanding will be documented through an evaluative survey upon acceptance to the certificate and then again upon completion. Knowledge, skills and commitment will also be evaluated through the portfolio created during the certificate program.

VIII. Letters of support from the various academic unit heads involved in developing the program initiative or whose support is vital to its success

Letters of support are attached (see Appendix E).

References

[1]PrincetonReview.com/college-hopes-worries.aspx
[2]http://www.indeed.com/jobtrends/Sustainability.html
[3]http://weinrebgroup.com/wp-content/uploads/2011/09/CSO-Back-Story-by-Weinreb-Group.pdf
[4]http://www.forbes.com/sites/meghancasserly/2012/05/11/10-jobs-that-didnt-exist-10-years-ago/
[5]http://www.usnews.com/education/best-colleges/slideshows/11-hot-college-majors/12
[6]http://sustainable.gatech.edu/education/virtues/

Appendix A. - Certificate Requirements

Students are required to take a minimum of 17 credit hours to earn the Certificate in Sustainability. The Certificate will consist of the following components:

1. Anchor course (3 credit hours)
2. One course from each of 3 "pillars" (9 credit hours)
3. Seminar (2 credit hours)
4. Capstone project (3 credit hours)

Anchor Course – These courses will provide a foundation in sustainability, including its history, components and application. Courses which qualify as an anchor course for this certificate will challenge students to evaluate their behavior as citizens and consumers and encourage them to think about the interdisciplinary challenges associated with a sustainable future. There will be a minimal number of courses from different departments from which students can choose that will serve as anchor courses. Each of the courses selected to be on the anchor course list will be thoroughly vetted to ensure it provides the breadth as a foundation in sustainability. Currently LAND 2300, FANR 1100, FANR 4271, Ecology 1000 taught in Costa Rica and APTC 4010 can satisfy this requirement.

Seminar – The seminar will introduce students to the many ways UGA faculty and the ACC community are promoting sustainability. It will provide students with a foundational background in sustainability and emphasize the interdisciplinary evaluation and solutions. Sustainability challenges including climate change, biodiversity and the built environment will be addressed. The seminar will be open to the entire UGA Community as a means of connecting and communicating across disciplines. The seminar will also allow students the opportunity to present their capstone course project and receive feedback from their peers.

Capstone Course/Project – This course will provide students with an opportunity to apply what they have learned to hands on sustainability challenges. Through this course they will work on interdisciplinary teams on problems identified on campus and in the surrounding community.

Portfolio – A collection of documents presented at the completion of the capstone project that tie together the courses, seminar and application project completed by the student. This portfolio will provide students with an opportunity to reflect on the integration of disciplines, systems thinking, analysis of complex problems and on-going commitment.

Appendix B. – Pillars

Ecological Sustainability – 3 credit hours

Courses in the ecological sustainability pillar will build upon a baseline understanding of ecology and address issues concerning ecosystem services, environmental degradation, and climate change.
Courses in this area must provide a basic understanding of ecological and environmental process, including:

- The interdependence of species and the dynamic interrelationships within social and ecological systems.
- Systemic limits, such as carrying capacity, and the ways in which human systems can and do threaten ecological systems.
- Local biomes, watersheds, and natural history.
- Biodiversity
- Ecosystem health.
- Ecosystem services.
- Concepts of energy, water and waste

Ideally classes will connect this understanding of ecological processes to human and economic systems, particularly the ways in which these systems inter-relate and impact one another.

Economic Sustainability – 3 credit hours

Courses in this pillar will build upon a baseline understanding of economics and address bottom-line issues such as:

- The economics of population growth
- Poverty and income distribution
- Market failures
- Economic valuation
- Economic incentive instruments
- Food, water and energy resources
- International agricultural markets
- Fisheries, and wildlife conservation
- Concern for intergenerational equity in the long-term decision making of a society

Classes should connect economic principles to social and ecological realities focusing on sustainable development.

Social Sustainability – 3 credit hours

Courses in the social sustainability pillar will build upon a basic understanding of social science and will address the social aspects of sustainability, including issues of cultural diversity, social justice, equality, participation, the built environment, and community. Courses must cover one or more of the following:

- Cross-cultural perspectives of sustainability.
- Cultural assumptions of environmental and social problems.
- The relationship between poverty, social justice, and environmental degradation.
- Intergenerational responsibility
- Power and limits of new technologies and the relationship between technological and other types of solutions.
- Impact of the built environment on ecology and society.
- Development and conservation.
- Human consumption.
- Community.
- Normative assumptions and ethical frameworks, particularly as they relate to equity, justice, human rights, and extending the moral community.
- Personal values within the context of a larger society and how these values are manifested in daily habits.
- Humans' place and limits within ecological systems.
- Principles of environmental ethics and their application to population, habitat quality, affluence, and energy use.
- Environmental rhetoric and persuasive arguments that address sustainability issues.
- Environmental Law and Policy.
- Communications and the Arts.
- Institutional factors mediating human-environment interactions
- Unequal power relations

Ideal classes cover personal assets and those aspects of community that lead to a quality life for all now and into the future.

Appendix C. – Possible Courses

(The specific courses included below have been confirmed by the instructors listed to meet the goals of the certificate. Before the launch of the certificate, courses for each "pillar" will be vetted by the Advisory Board. This list may be revised &/or expanded.)

ECOLOGICAL COURSES

Course ID	Course Name	Offered	Prerequisites	Instructor
ANTH 4010	Historical Ecology	Fall semester every year	ANTH 1102	Theodore Gragson
ANTH 4275*	Conservation and Development in Costa Rica	Study Abroad	Permission of Department	Pete Brosius
ANTH 4900	Institutional Dimensions of Sustainability	Spring semester every year	ANTH 1102	Laura German
BIOL(FANR) 3460/H	Natural History of the South Pacific	Maymester and summer every year	BIOL 1108 or permission of department	Mark Farmer
CRSS 3060	Soils and Hydrology	Every year	CHEM 1211 and CHEM 1211L & CRSS(FANR) 3060L (Corequisite)	Todd Rasmussen, Rhett Jackson, William Miller
ECOL 1000	Ecological Basis of Environmental Issues	Fall and spring semesters every year	Not open to students with credit in LAND 1000 or ECOL 1000H	Scott Connelly, Sonia Altizer
ECOL 3530	Conservation Biology	Fall semester every year	BIOL 1104 or (BIOL 1108 and BIOL 1108L)	John Gittleman
EDES 4650	City Planning	Not offered on a regular basis	Unknown	Stephen Ramos
EHSC 3060	Introduction to Environmental Health Science	Fall, spring, and summer semesters every year	None	Anne Marie Zimeri
ENVE 2610	Introduction to Environmental Engineering and Sustainability	Every year	MATH 1113 or Permission of Department	David Gattie
ENVE 4230	Ecosystem Energetics	Every year	ENVE 3220	John Shramski
FANR 1100	Natural Resources Conservation	Fall and spring semesters every year	Not open to students with credit in FORS 1100	Gary Green, Susan Wilde
FANR(MARS) 4272*	Antarctica: The fragile continent	Fall semester every other year	None	Michael Tarrant

FANR 4273*	Field Studies in Sustainable Development	Study Abroad	None	Michael Tarrant
GEOG 4020	Fluvial Geomorphology	Fall and spring semesters every year	GEOG 1111 or GEOG 1113 or permission of department	David Leigh
GEOG 4350	Remote Sensing of Environment	Fall and spring semesters every year	GEOG 4330/6330-4330L/6330L or permission of department	Deepak Mishra
GEOG 4460	Field Methods in Remote Sensing	Spring semester every year	GEOG 4350/6350-4350L/6350L or permission of department	Deepak Mishra
GEOG(ECOL)(FANR) 1200	Natural History of Georgia	Fall and spring semesters every year	None	Gary Grossman
HORT 3300	Organic Gardening	Fall and spring semesters every year	BIOL 1103 or BIOL 1104 or BIOL 1107 or BIOL 1108 or PBIO(BIOL) 1210 or PBIO(BIOL) 1220 or HORT 2000 or CRSS 2010-2010L	David Berle
HORT 4030S	Sustainable Community Food Production	Fall and summer semesters every year	CRSS 2010-2010L or HORT 2000 or BIOL 1107-1107L or PBIO(BIOL) 1210 or permission of department	David Berle
LAND 1500	Design and the Environment	Fall semester every year	None	David Spooner
LAND 3410	Plants of the South	When offered by Dr. O'Brien	None	Maureen O'Brien
LAND 4360	Applied Landscape Ecology	Fall semester every year	LAND 2310, open only to CED students	Jon Calabria, Alfie Vick
LAND 4730	Issues and Practices in Sustainable Design	Spring semester every year	LAND 4380 and LAND 4570	Alfie Vick

*course is a Study Abroad option

SOCIAL COURSES

Course ID	Course Name	Offered	Prerequisites	Instructor
AESC 2050	Effects of Global Agriculture on World Culture	Fall semester every year	None	Robert Beckstead

ALDR 3820	Reflections on Fighting Hunger	Spring semester every year	Second year student standing	Maria Navarro
ANTH 3200	How the World Works: The Anthropology of Consumption and Globalization	Not listed	Not open to students with credit in ANTH 2200	Pete Brosius
ARST 1080	Three-Dimensional Design	When offered by Dr. Strange	None	Georgia Strange
COMM 3310	Case Studies in Public Communication – Rhetoric, Sustainability, and Transformation	When offered by Dr. Hurt	Not open to students with credit in SPCM 3310	Nicole Hurt
ENVE 4530	Energy and Environmental Policy Analysis	Every year	Permission of department	Jenna Jambeck
ENVM 4930/4930E	Environmental Law and Governmental Regulation	Fall semester every odd-numbered year	Third year standing and (POLS 1101 or HIST 2111 or HIST 2112)	Terence Centner
FANR(ECOL) 4810	Natural Resources Law	Spring semester every year	Not open to students with credit in FANR 5850/7850 or FORS 5820/7820	Catherine Clutter
HPRB 1710	Health and Wellness	When offered by Pam Orpinas	None	Pam Orpinas
LAND 4095	Sustainability in Design	Fall semester every year	Open only to CED students	Sungkyung Lee
LAND 4440	Plant Communities of the Cherokee Landscape	Summer semester every year	LAND 4360	Alfie Vick
PHIL(EETH) 4220	Environmental Ethics	Spring semester every even-numbered year	PHIL 2200 or any 3000-level PHIL course or permission of department	Sarah Wright
PHIL(EETH) 4250	Philosophy of Technology	Spring semester every odd-numbered year	Any 3000-level PHIL course or permission of department	Sarah Wright
WMST 4170S	Environment, Gender, Race, Class	Offered every other year	None	Cecilia Herles

ECONOMIC COURSES

Course ID	Course Name	Offered	Prerequisites	Instructor
AAEC 4720	Food Security, Economic Development, and the Environment	Fall semester every year	AAEC 2580 or ECON 2106 or ECON 2106H	Nicholas Magnan
ECON 2100	Economics of Environmental Quality	Every year	ECON 2106 and ECON 2105	Tianwei Zhang
ENGR 4660	Sustainable Building Design	Fall semester every year	Third-year standing	Tom Lawrence
ENVM 4250	Environmental and Public Health Law	Spring semester every year	Third-year student standing and (POLS 1101 or HIST 2111 or HIST 2112)	Terence Centner
ENVM 4540	Economics of Energy and Sustainable Development	Every year	ENVE 3520	Nicole Sochacka
ENVM 4800	Water Resource Economics and Management	Fall semester every year	Third year standing and (AAEC 2580 or ECON 2106 or ECON 2106H)	Jeffrey Mullen
ENVM 4930	Environmental Law and Governmental Regulation	Fall semester every odd-numbered year	Third year standing and (POLS 1101 or HIST 2111 or HIST 2112)	Terence Centner
FANR(ECOL) 4810	Natural Resources Law	Spring semester every year	Not open to students with credit in FANR 5850/7850 or FORS 5820/7820	Catherine Clutter
MIST 4550	Energy Informatics	Every year	Unknown	Richard Watson

Appendix D. – Possible Affiliate Faculty

(These faculty have expressed interest in including their courses in certificate requirements or otherwise being involved in the implementation of the certificate.)

Dr. Sonia Altizer; Odum School of Ecology

Dr. Robert Beckstead; Poultry Science; College of Agriculture and Environmental Science

Dr. David Berle; Horticulture; College of Agriculture and Environmental Science

Dr. Bynum Boley; Warnell School of Forestry and Natural Resources

Dr. Peter Brosius; Anthropology; Franklin College of Arts and Science

Dr. Marie Claire Boudreau; Management Information Systems; Terry College of Business

Dr. Terence Centner; Agriculture and Applied Economics; College of Agriculture and Environmental Science

Dr. Scott Connelly; Odum School of Ecology

Dr. Catherine Clutter; Office of the VP for Instruction

Dr. Brad Davis; College of Environment and Design

Dr. Jeffrey Dorfman; Agriculture and Applied Economics; College of Agriculture and Environmental Science

Dr. Mark Farmer; Biological Sciences; Franklin College of Arts and Sciences

Dr. David Gattie; College of Engineering

Dr. Laura German; Anthropology; Franklin College of Arts and Sciences

Dr. John Gittleman; Dean of Ecology, Odum School of Ecology

Dr. Theodore Gragson, Anthropology; Franklin College of Arts and Sciences

Dr. Gary Green; Warnell School of Forestry and Natural Resources

Dr. Gary Grossman; Geography; Franklin College of Arts and Sciences

Dr. Cecilia Herles; Women's Studies; Franklin College of Arts and Sciences

Dr. Nicole Hurt; Communications; Franklin College of Arts and Sciences

Dr. Sungkyung Lee; College of Environment and Design

Dr. David Leigh; Geography; Franklin College of Arts and Sciences

Dr. Rhett Jackson; Warnell School of Forestry and Natural Resources

Dr. Jenna Jambeck; College of Engineering

Dr. Nicholas Magnan; Agriculture and Applied Economics; College of Agriculture and Environmental Science

Dr. William Miller; Crop and Soil Sciences; College of Agriculture and Environmental Science

Dr. Deepak Mishra; Geography; Franklin College of Arts and Sciences

Dr. Jackie Mohan; Odum School of Ecology

Dr. Jeffrey Mullen; Agriculture and Applied Economics; College of Agriculture and Environmental Science

Dr. Dan Nadenicek, Dean College of Environment and Design

Dr. Maria Navarro; Agricultural Leadership and Development, College of Agriculture and Environmental Science

Dr. Quint Newcomer, Director UGA Costa Rica, Odum School of Ecology

Dr. Nathan Nibbelink; Warnell School of Forestry and Natural Resources

Dr. Maureen O'Brien; College of Environment and Design

Dr. Suzanne O'Connell; Horticulture; College of Agriculture and Environmental Science

Dr. Pamela Orpinas; College of Public Health

Dr. Jim Porter; Odum School of Ecology

Dr. Stephan Ramos; College of Environment and Design

Dr. Todd Rasmussen; Warnell School of Forestry and Natural Resources

Dr. John Shramski; College of Engineering

Dr. Nicola Sochacka; College of Engineering

Dr. David Spooner; College of Environment and Design

Dr. Georgia Strange; Lamar Dodd School of Art

Dr. Michael Tarrent; Director, Global Programs in Sustainability, Warnell School of Forestry and Natural Resources

Dr. Richard Watson, Management Information Systems, Terry College of Business

Dr. Susan Wilde; Warnell School of Forestry and Natural Resources

Dr. Alan Wolk; Banking and Finance; Terry College of Business

Dr. Tianwei Zhang; Economics; Terry College of Business

Dr. Anne Marie Zimeri; Environmental Health Sciences; School of Public Health

Appendix E. – Letters of Support

(The Interdisciplinary Certificate in Sustainability is supported by multiple UGA colleges and schools, including College of Agricultural and Environmental Sciences, Franklin College of Arts and Sciences, Terry College of Business, Odum School of Ecology, College of Engineering, College of Environment and Design, College of Family and Consumer Sciences, Warnell School of Forestry and Natural Resources, College of Public Health, School of Social Work. Letters of Support are attached.)

INTERDISCIPLINARY CERTIFICATE PROGRAM PROPOSAL
CERTIFICATE IN SUSTAINABILITY

I. Basic Information

Institution: University of Georgia **Date:** March 31, 2015

School/College:

The Certificate will be housed in the following schools / colleges:

College of Agricultural and Environmental Sciences
Franklin College of Arts and Sciences
Terry College of Business
Odum School of Ecology
College of Engineering
College of Environment and Design
College of Family and Consumer Sciences
Warnell School of Forestry and Natural Resources
College of Public Health
School of Social Work

Department/Division: Dean's Office from each participating school / college. Administrative support will be provided by Center for Integrative Conservation Research and the Office of Sustainability

Certificate Title: Certificate in Sustainability

Level: Graduate

Proposed starting date for program: Fall 2015

Abstract for the program:

Increasingly, human and ecosystems challenges require sustainable solutions that recognize the interconnection between environmental limits and human values and well-being. The University of Georgia (UGA), in their 2020 Strategic Plan, outline four specific Strategic Directions to which this certificate will directly respond. The Certificate in Sustainability will enhance opportunities for integrative, applied learning in interdisciplinary settings as well as prepare students to address difficult global sustainability issues. The certificate will also work towards the University's goal of incorporating sustainability into formal educational opportunities. Students across campus will benefit from an understanding of the framework of sustainability and an opportunity to apply skills and learning to real world solutions.

II. Purpose and Educational Goals

Purpose

Human and ecosystem challenges require sustainable solutions that recognize the interconnection between environmental limits and human well-being. In order to achieve a healthy, equitable society while maintaining earth's basic systems, we must cross disciplinary divides and infuse sustainability principles into every discipline. Students must learn to approach problems holistically and integrate social, economic, and environmental concerns as they apply their knowledge.

Leadership in sustainability research, education and service is a "hallmark" of The University of Georgia's 2020 Strategic Plan. Strategic Direction I emphasizes "knowledge of human cultures and the physical and natural world" through "integrative and applied learning." Strategic Direction II calls for graduate programs that "meet increasingly complex societal needs with cutting-edge, interdisciplinary offerings." Strategic Direction III foresees enhanced interdisciplinary research to address "immediate issues as well as 'grand challenge' problems" such as "safe and sufficient supplies of food and water, poverty and social justice, education, global health, environmental degradation, world financial stability, national security, and sustainable energy." Strategic Direction VII states that "sustainability should be infused into formal and informal educational opportunities throughout the university."

The Certificate in Sustainability responds to Strategic Plan priorities explicitly by preparing students for effective leadership on campus and beyond. It supplements existing majors with knowledge of the complex interactions between human and environmental systems. Students will be introduced to a breadth of sustainability issues, systemic limits, and the triple bottom line (equity, environment, economy), to support their professional development. Students across campus will benefit from an understanding of the framework of sustainability and an opportunity to apply skills and learning to real world solutions.

Broad Objectives

As a result of this certificate, students of any discipline will be able to:

I. Demonstrate understanding of foundational sustainability concepts.
    a. Met by: Anchor course, pillars, seminar, capstone course
II. Apply systems thinking and interdisciplinary education to sustainability challenges.
    a. Met by: Anchor course, seminar, and capstone course
III. Apply academic knowledge to real world problems inside and outside of the classroom.
    a. Met by: Capstone course
IV. Earn a credential that supports their existing discipline.
    a. Met by: Pillars
V. Facilitate service learning and community partnership.
    a. Met by: Capstone course and seminar

VI. Initiate interdisciplinary communication between fellow students, faculty, and staff through the annual seminar and implementation of projects and research.
    a. Met by: Anchor course, seminar, pillars, capstone course

Specific Objectives

As a result of this certificate, students of any discipline will be able to:

I. Apply systems thinking to real-world problems through knowledge of social, economic, and ecological systems, including limits and interdependence.
    a. Met by: Anchor course, three pillars, seminar, and capstone course
II. Demonstrate knowledge of human cultures and their interaction with the natural and physical world.
    a. Met by: Pillars, capstone course
III. Find sustainable solutions to human-ecosystem challenges.
    a. Met by: Seminar, pillars, capstone course
IV. Develop interdisciplinary knowledge and an understanding of the interconnectedness of sustainability challenges that transcends academic disciplines.
    a. Met by: Anchor course, three pillars, seminar, and capstone course
V. Apply problem-solving skills and knowledge to place-based, real world sustainability challenges.
    a. Met by: Capstone course
VI. Gain a local and global intercultural and intergenerational perspective that nurtures empathy, awareness, and respect.
    a. Met by: Anchor course, seminar, three pillars, capstone course
VII. Understand the complexity of relationships within and across communities.
    a. Met by: Anchor course, seminar
VIII. Build an informed, ethical, and scholarly sense of citizenship
    a. Met by: Anchor course, three pillars, seminar, and capstone course

III. Interdisciplinary nature of the proposed program

Sustainability inherently embraces many disciplines, methodologies, and institutional practices. Students enrolled in the certificate program will gain knowledge that addresses both human and ecological systems by requiring courses from different pillars of sustainability (social, economic, environmental) and providing them with opportunities to develop inter- and trans-disciplinary projects and solutions. To achieve this, the program will involve multiple schools and colleges at UGA and has the potential to include any discipline on campus. Both the anchor course and the seminar will draw from faculty expertise in many colleges and schools. The certificate pillars will allow students to explore sustainability through multiple lenses, enabling them to view sustainability problems holistically.

IV. Expected Enrollment

Twenty students are expected to enroll in the first semester, followed by increases in each semester thereafter. Fifty students are expected to enroll by year three.

V. Why this program is necessary

Sustainability is one of the biggest challenges facing our society. Meeting needs of the present without compromising the ability of future generations to meet their needs will require an understanding of the complex interactions between humans and environmental systems. It requires a workforce willing to look outside traditional disciplines for creative, holistic solutions. Sustainability is a process rather than a product, thus requiring trans-disciplinary thinking and opportunities for experiential learning.

The Certificate in Sustainability will provide students with the knowledge and skills they will need to contribute to a more sustainable future. The program will help students become effective leaders and agents of change for sustainability in a wide range of vocations. Such vocations may be researcher, teacher, corporate officer, technology specialist, business owner, farmer, nonprofit manager, or government official.

This certificate also places UGA at the forefront of efforts nationwide to expand curricular sustainability offerings, making graduates more competitive to employers. A 2014 survey of 10,116 college applicants by the *Princeton Review*[1] determined that 61 percent of respondents would value having information about a college's commitment to the environment and 23 percent said such information would impact their decision to apply to or attend the school.

Similarly, Indeed.com[2], a website where employers post job openings, saw the number of job postings containing the keyword "sustainability" increase over the past decade. The graph below presented by Indeed displays the increase in sustainability-related jobs. The Certificate in Sustainability would prepare students for the increasing number of careers in sustainability.

In addition, senior executive sustainability officers have increased dramatically in recent years. From 2004 to 2011, 29 U.S. companies added Chief Sustainability Officers (CSO), according to one report[3]. Many more companies have similar positions at director levels. Forbes Magazine in May 2012 listed "Sustainability Expert" as one of 10 jobs on the rise that did not exist 10 years ago[4].

In September 2013, U.S. News and World Report came out with "11 Hot College Majors" and named Sustainability as number 11. The article stated that companies of all types seek to reduce waste, increase efficiency, and reduce pollution[5].

A study[6] conducted at The Georgia Institute of Technology, through the VIRTUES program, surveyed 185 Georgia companies and governments in 2013 about workforce education and training for sustainability. Fifty percent of the 101 companies who answered the question, "What are the hard skills related to sustainability that your organization finds the most challenging to fulfill?" indicated "critical thinking (including concepts like systems thinking, cradle to cradle, or lean manufacturing)." Of the 101 who answered the question, "What soft skills related to sustainability that your organization finds the most challenging to fulfill?" 56% said "creativity in problem solving". Clearly, there is a need for graduates who are able to think systemically and creatively in any career. The Certificate in Sustainability would prepare students to address global issues and encourage them to develop a global mindset.

VI. Additional Information

1. **Program Initiation:** Spring 2015
2. **Full Implementation of Program:** Fall 2015
3. **First Certificates:** Spring 2016
4. **Annual Number of Expected Graduates:** 20 (first year), 50 (by third year)
5. **Projected Future Trends:** Continued increase in student enrollment

1. **Documentation of student interest in the program**

A growing number of UGA students have expressed interest in economic, social, and environmental issues concerning sustainability. Students have created and joined numerous environmental groups on campus that promote and foster sustainability, including the Go Green Alliance (GGA), an umbrella organization for sustainability focused groups on campus, and a separate sustainability committee in the student-run Residence Hall Association.

In 2010, the GGA developed and promoted a $3.00 "green" fee to help support sustainable practices on campus. With overwhelming student support, this green fee passed and helped fund the Office of Sustainability. The Office of Sustainability was created in February of 2010 to support and coordinate environmental and sustainable efforts on campus.

Demonstrating the growing student interest in hands-on sustainability projects, the Office of Sustainability consistently receives more applicants for student internships, from disciplines across campus, than there are positions available.

Graduate and undergraduate advisors at UGA have documented growing interest in sustainability in a fall 2012 survey. Six out of six faculty advisors indicated that their students had expressed an interest in sustainability courses. Five out of six indicated that this interest has increased in recent years, and four out of six stated that their students are interested in sustainability related careers.

In a September 2014 survey of 197 undergraduate and graduate students from 63 different majors at UGA, 62% indicated that they would consider completing a Certificate in Sustainability to complement their degree. Additionally, 56% said that sustainability related to their intended career. In a similar 2012 survey the following quotes were gathered, expressing student interest:

> *"I was thrilled to hear about this new opportunity that could soon be available to UGA students. As a Public Relations major, I fall outside of the typical audience for green initiatives and sustainable practices. However I realize the importance of this issue in the local, national and international community, which is why I'm so interested in the topic...So many companies are making an effort to become green. In fact, sustainability is becoming a factor in the decision making process among C-suite executives, further validating its importance. Offering this certificate to*

students will better equip UGA grads to the changing nature of business." Will Linto, Grady College of Journalism

"The Certificate in Sustainability would better prepare future graduates for the marketplace as well as the workforce, allowing them to remain on the cutting edge of sustainable techniques. As a major research institution with its roots in agriculture, the University of Georgia could only profit from the proposed Certificate in Sustainability, through fostering better relations across disciplines, giving back more to the Athens' community, and advancing sustainability practices to improve the quality of life worldwide and across species." Elizabeth Rockwell, English

2. **Evidence of student demand sufficient to sustain reasonable enrollments**

Students across campus have expressed interest in supplementing their degrees with certification in sustainability (See survey results above). In the above-mentioned survey of academic advisors, all stated that their students would be interested in a certificate in sustainability. Over 60% of the students surveyed likewise expressed an interested in a certificate in sustainability. This growing interest is likely to continue in reaction to the increasing career opportunities in sustainability.

- **Minority student enrollments:** The intent of the Certificate in Sustainability is to attract students from every discipline across UGA. Participation in this interdisciplinary certificate which focuses on economics, environment, and social equity may enhance recruitment of a diverse student body. Efforts will be made to recruit students from many backgrounds.

VII. Detailed Information

1. **Curriculum Outline:** (See Appendix A).

The curriculum for the Certificate in Sustainability requires 17 credit hours. These hours include an anchor course (3 credits), one course from each "pillar" (social, ecological, economic) (9 credits), a required yearlong seminar (2 credits), an approved application project (3 credits), and a portfolio that ties these requirements together (completed as a part of the application project course. The seminar course will begin with a historical and foundational background in sustainability, move into the science, economic, and social aspects of sustainability, and introduce various sustainability challenges including climate change, biodiversity, energy and the built environment. Students will also be required to present information and updates related to their application project during one meeting of the seminar. The three pillars, from which students will select one course each, represent the widely recognized three pillars of sustainability: environment, society, and economy (see Appendix B).

2. **Model programs, accepted disciplinary standards, and accepted curricular practices**

At UGA, the most similar models to the Certificate in Sustainability (CS) for undergraduates are the Local Foods Systems (LFS) Certificate, the Environmental Ethics Certificate (EEC) and the Obesity and Weight Management Certificate.

The LFS Certificate requires all students enrolled to take basic required courses and then choose from a "cluster area of focus" in one of three areas. The CS will require students to select one course from each pillar instead of choosing just one focus area which, along with the seminar and the anchor course, will ensure an adequate foundation in all the three pillars of sustainability.

The EEC is awarded to students who successfully complete at least 18 hours of course work, including at least 7 credit hours in core courses (one 3-or 4-hour course in ecology, one 3-hour course in ethics, and one 1-hour course in environmental ethics seminar), 7 or 8 hours in approved elective courses, and 3 hours for an approved research paper in environmental ethics.

There are over 40 minors in sustainability at other institutions in the United States. There are at least 15 certificate programs at the undergraduate and graduate level. Some of these schools include Penn State, the University of Iowa, the University of Utah, and the University of Wisconsin. The requirements of these programs are similar. For example, the University of Utah Sustainability Certificate was initiated in 2012 and requires 23 credit hours with one required introductory course, one final project, and 15 hours of electives.

3. **Program accreditation**

No formal accreditation standards currently exist for the area of sustainability. The proposed UGA Certificate in Sustainability is unique to UGA, but is similar to several other programs (listed above).

4. **Faculty resources**

The Director of the Certificate in Sustainability will provide instructional support for the program. This includes:

1) Coordinate course offerings and maintain student records
2) Coordinate and promote activities (seminars, speakers, receptions) associated with the program and do whatever is appropriate to secure extramural funding lines to support program activities).
3) Consult with the Advisory Committee on matters of policy, planning and course requirements.

Buy-out of one unit per year, or ideally one unit per semester, is needed for the Director. Administrative staff at CICR is needed to assist the Director with administration of the

certificate program, management of the faculty advisory board, course approvals and maintaining student records. An intern at the Office of Sustainability will work 10 hours per week to help establish program logistics and develop communications and outreach materials during years one and two of the program.

Additional faculty will serve on the Advisory Board to oversee the program, approve new courses, oversee disbursement and use of program funds, and revise program requirements over time. The Advisory Board will be comprised of representatives from each conferring college, the Center for Integrative Conservation Research, Office of Sustainability, the Director, and additional faculty chosen as needed by the Director, CICR and OoS to provide balanced representation from each area of sustainability (economic, social, and ecological). Board members will serve two-year renewable terms.

The Certificate includes a seminar series that will be run by the Director with support from the Office of Sustainability and the Center for Integrative Conservation Research. The Certificate will also have a Faculty Affiliate program made up of faculty teaching coursework or overseeing projects or internships used to complete the certificate. These faculty may also serve as guest speakers during the seminar series and anchor course. (For a potential list of faculty affiliates, see Appendix D.)

5. **Additional faculty needed**

   No additional faculty are needed.

6. **Library, computer, and other instructional resources needed**

   Current resources are adequate to support the Certificate in Sustainability so long as current resources do not decrease.

7. **Physical facilities necessary to fully implement the program**

   No additional physical facilities are needed for the implementation of the certificate.

8. **Building, classroom, laboratory, and office space**

   No additional facilities are needed for the implementation of the certificate. (Existing office space will be utilized for the Certificate Director.)

9. **Expense to the institution (including personnel, operating, equipment, facilities, library, etc.) required to fully implement the program**

   The Certificate in Sustainability will be administered by existing staff in the Center for Integrative Conservation Research and the Office of Sustainability. The program will require one course credit buyout time for the Director per year or ideally one

buyout per semester, stipends for two student interns at the Office of Sustainability, and funding for outreach materials.

Item	Amount	Source	Details
Director Buyout	$4,320	Franklin College	One course credit Buyout for the Director of the Certificate
Outreach	$1,000	Provost* Participating Colleges	Bus Placards, posters, web development
Intern Office of Sustainability (Years 1-2 only)	$4,000	Provost*	$1500/semester for an intern at the Office of Sustainability to assist in setting up the structure for the certificate. This will include developing communications and outreach materials, communicating with undergraduate advisors, working with the Director and CICR to establish procedures for submitting application project proposals and portfolios and tracking progress, etc.
Staff CICR	$4,680	Participating Colleges	Funding for staff to assist the director in managing student records, coordinate logistics (room and speakers) for the seminar series, schedule and take minutes at Advisory Board Meetings, and other tasks.

*Projected Expenses include startup funding from UGA Provost's Office for Years 1-2 only.

10. **Extent of student support (fellowships, assistantships, scholarships, etc.) available for this program**

    No fellowships, assistantships or scholarships are available for the Certificate in Sustainability. However UGA students can apply annually for sustainability grants through the Office of Sustainability to fund sustainability research and applied projects.

11. **Commitments of financial support needed**

    The annual cost to administer the Certificate is a minimum of $10,000. Additional start-up funding has been requested of the Provosts' office in the amount of $5,000 per year for 2 years to support development of the Certificate program. Multiple UGA colleges are committed to confer the certificate and provide $1,500 or more per year for three years, with participation to be re-evaluated after that time. Participating colleges include College of Agricultural and Environmental Sciences, Franklin

College of Arts and Sciences, Terry College of Business, Odum School of Ecology, College of Environment and Design, College of Family and Consumer Sciences, Warnell School of Forestry and Natural Resources, School of Social Work, and others. Funding that exceeds the minimum necessary requirements for certificate administration will be used to support programs that enhance teaching and learning related to the certificate program. Disbursement and use of certificate funds shall be determined by the Advisory Board.

Potential Program Enhancements Pending Available Funding**

Item	Amount	Source	Details
Seminar Series	$1,000	Participating Colleges	Funds to support the seminar series
Annual Speaker	$1,000-5,000	Participating Colleges	Funds to support one invited speaker per year
Semester in Review Event	$1,500	Office of Sustainability	Event at the end of each semester where students present a poster or display of their application project.
Faculty Development Grants	$500 per grant	Participating Colleges	Grants would provide funds to selected faculty to create or support Anchor course offerings or other efforts that support certificate objectives. Money could be used for course development, travel, speakers, etc.
Faculty Affiliate Program Events	$1,000	Participating Colleges + Office of Sustainability	An event held at the beginning of each year (similar to our past breakfasts) that bring together Faculty Affiliates of the Certificate to share opportunities and challenges.
Faculty Development Workshops	Up to $12,500	Participating Colleges + Office of Sustainability	Funds will support the Faculty Development Workshop aimed at integrating sustainability into the curriculum at UGA. New courses developed could satisfy certificate tracks.
Increased Director Buyout	$4,000+	Participating Colleges	Additional course buyout for program director as needed to support participating students.

** Disbursement and use of certificate funds shall be determined by the Advisory Board.

12. **Administration of the program**

The program will be facilitated and supported by the Center for Integrative Conservation Research with support from the Office of Sustainability.

The Certificate in Sustainability will be housed in and conferred by multiple colleges and schools, including College of Agricultural and Environmental Sciences, Franklin College of Arts and Sciences, Terry College of Business, Odum School of Ecology, College of Environment and Design, College of Family and Consumer

Sciences, Warnell School of Forestry and Natural Resources, School of Social Work, and others.

The Director, with the assistance of an intern, will review student applications to the program, advise students as they make progress, maintain appropriate student records, coordinate the seminar series (including student evaluation), support and evaluate the monitoring of student capstone projects or internships, and complete all necessary paperwork for the Registrar. The Director will also lead meetings of the Faculty Advisory Board.

The Faculty Advisory Board will serve as the certificate steering committee and will meet as needed (at least once a semester) to support and advise the Director of the program.

One chief task of the Board will be to review courses for inclusion in the certificate. The process for inclusion will be as follows: faculty will submit an application to the Director for inclusion of the course in the certificate; the application will include a brief statement of how the course addresses sustainability, the faculty member's area of expertise and research, and a syllabus. The Director will review the application and forward it to the Board, which when gathered will vote on the application. The Board will periodically review courses previously submitted to make sure their inclusion in the Certificate remains appropriate.

Other responsibilities of the Board include selecting the program Director, advising the Director regarding student capstone projects and internships as needed, overseeing disbursement and use of Certificate program funds, and generally serving as ambassadors of the Certificate, encouraging students, recruiting faculty participation, and periodically attending or presenting at the Certificate seminar.

13. **Technical Support Needed**

Technical support and office space will be provided to the Director by his or her home department. Existing staff in the Center for Integrative Conservation Research and the Office of Sustainability receive technical support from their respective units.

14. **Degree to which that structure is in keeping with good practice and accepted standards**

This is similar to the other certificates currently on campus, particularly including administration of the Certificate in Obesity and Weight Management.

15. **How and by what criteria students will be admitted to and retained in the program and how these procedures are consistent with accepted standards for effective and successful programs**

Students may apply for acceptance into the Certificate in Sustainability program at any point during their course of study. Students will complete an application, which will include a proposed course of study, to the Director for approval. Students in good standing at the University who have completed the application will be accepted and retained, provided they make good progress toward completion of the certificate.

Effective changes in student knowledge and understanding will be documented through an evaluative survey upon acceptance to the certificate and then again upon completion. Knowledge, skills and commitment will also be evaluated through the portfolio created during the certificate program.

VIII. Letters of support from the various academic unit heads involved in developing the program initiative or whose support is vital to its success

Letters of support are attached (see Appendix E).

References

[1]PrincetonReview.com/college-hopes-worries.aspx
[2]http://www.indeed.com/jobtrends/Sustainability.html
[3]http://weinrebgroup.com/wp-content/uploads/2011/09/CSO-Back-Story-by-Weinreb-Group.pdf
[4]http://www.forbes.com/sites/meghancasserly/2012/05/11/10-jobs-that-didnt-exist-10-years-ago/
[5]http://www.usnews.com/education/best-colleges/slideshows/11-hot-college-majors/12
[6]http://sustainable.gatech.edu/education/virtues/

Appendix A. - Certificate Requirements

Students are required to take a minimum of 17 credit hours to earn the Certificate in Sustainability. The Certificate will consist of the following components:

1. Anchor course (3 credit hours)
2. One course from each of 3 "pillars" (9 credit hours)
3. Seminar (2 credit hours)
4. Capstone project (3 credit hours)

Anchor Course – These courses will provide a foundation in sustainability, including its history, components and application. Courses which qualify as an anchor course for this certificate will challenge students to evaluate their behavior as citizens and consumers and encourage them to think about the interdisciplinary challenges associated with a sustainable future. There will be a minimal number of courses from different departments from which students can choose that will serve as anchor courses. Each of the courses selected to be on the anchor course list will be thoroughly vetted to ensure it provides the breadth as a foundation in sustainability. In the future new team-taught interdisciplinary courses may be created to meet this goal.

Seminar – The seminar will introduce students to the many ways UGA faculty and the ACC community are promoting sustainability. It will provide students with a foundational background in sustainability and emphasize the interdisciplinary evaluation and solutions. Sustainability challenges including climate change, biodiversity and the built environment will be addressed. The seminar will be open to the entire UGA Community as a means of connecting and communicating across disciplines. The seminar will also allow students the opportunity to present their capstone course project and receive feedback from their peers.

Capstone Course/Project – This course will provide students with an opportunity to apply what they have learned to hands on sustainability challenges. Through this course they will work on interdisciplinary teams on problems identified on campus and in the surrounding community.

Portfolio – A collection of documents presented at the completion of the capstone project that tie together the courses, seminar and application project completed by the student. This portfolio will provide students with an opportunity to reflect on the integration of disciplines, systems thinking, analysis of complex problems and on-going commitment.

Appendix B. – Pillars

Ecological Sustainability – 3 credit hours

Courses in the ecological sustainability pillar will build upon a baseline understanding of ecology and address issues concerning ecosystem services, environmental degradation, and climate change.
Courses in this area must provide a basic understanding of ecological and environmental process, including:

- The interdependence of species and the dynamic interrelationships within social and ecological systems.
- Systemic limits, such as carrying capacity, and the ways in which human systems can and do threaten ecological systems.
- Local biomes, watersheds, and natural history.
- Biodiversity
- Ecosystem health.
- Ecosystem services.
- Concepts of energy, water and waste

Ideally classes will connect this understanding of ecological processes to human and economic systems, particularly the ways in which these systems inter-relate and impact one another.

Economic Sustainability – 3 credit hours

Courses in this pillar will build upon a baseline understanding of economics and address bottom-line issues such as:

- The economics of population growth
- Poverty and income distribution
- Market failures
- Economic valuation
- Economic incentive instruments
- Food, water and energy resources
- International agricultural markets
- Fisheries, and wildlife conservation
- Concern for intergenerational equity in the long-term decision making of a society

Classes should connect economic principles to social and ecological realities focusing on sustainable development.

Social Sustainability – 3 credit hours

Courses in the social sustainability pillar will build upon a basic understanding of social science and will address the social aspects of sustainability, including issues of cultural diversity, social justice, equality, participation, the built environment, and community. Courses must cover one or more of the following:

- Cross-cultural perspectives of sustainability.
- Cultural assumptions of environmental and social problems.
- The relationship between poverty, social justice, and environmental degradation.
- Intergenerational responsibility
- Power and limits of new technologies and the relationship between technological and other types of solutions.
- Impact of the built environment on ecology and society.
- Development and conservation.
- Human consumption.
- Community.
- Normative assumptions and ethical frameworks, particularly as they relate to equity, justice, human rights, and extending the moral community.
- Personal values within the context of a larger society and how these values are manifested in daily habits.
- Humans' place and limits within ecological systems.
- Principles of environmental ethics and their application to population, habitat quality, affluence, and energy use.
- Environmental rhetoric and persuasive arguments that address sustainability issues.
- Environmental Law and Policy.
- Communications and the Arts.
- Institutional factors mediating human-environment interactions
- Unequal power relations

Ideal classes cover personal assets and those aspects of community that lead to a quality life for all now and into the future.

Appendix C. – Possible Courses

(The specific courses included below have been confirmed by the instructors listed to meet the goals of the certificate. Before the launch of the certificate, courses for each "pillar" will be vetted by the Advisory Board. This list may be revised &/or expanded.)

ECOLOGICAL COURSES

Course ID	Course Name	Offered	Prerequisites	Instructor
ANTH 6010	Historical Ecology	Fall semester every year	ANTH 1102	Theodore Gragson
ANTH 6900	Institutional Dimensions of Sustainability	Spring semester every year	Unknown	Laura German
ANTH 6275*	Conservation and Development in Costa Rica	Study Abroad	Permission of Department	Pete Brosius
ANTH(ICON) 8560	Conservation and Development Practice	Unknown	Unknown	Laura German
ECOL 6140	Principles of Conservation Ecology and Sustainable Development II	Spring semester every year	ECOL 6080	Unknown
ECOL 8710/JURI 5290	Environmental Law Practicum			Laurie Fowler
EDES 6650	City Planning	Not offered on a regular basis	Unknown	Stephen Ramos
ENGR 6660	Sustainable Building Design	Fall semester every year	Permission of Department	Tom Lawrence
FANR 6273S*	Field Studies in Sustainable Development	Study Abroad	None	Michael Tarrant
GEOG 6020	Fluvial Geomorphology	Fall and spring semesters every year	Permission of Department	David Leigh
GEOG 6350	Remote Sensing of Environment	Fall and spring semesters every year	GEOG 6330/L or Permission of department	Deepak Mishra
GEOG 6460	Field Methods in Remote Sensing	Spring semester every year	GEOG 4350/6350-4350L/6350L or permission of department	Deepak Mishra
HORT 6030S	Sustainable Community Food Production	Fall and summer semesters every year	Permission of department	David Berle
LAND 6030	Nature and Sustainability	Fall semester every year	Co-requisite: EDES 6530	Alfie Vick, Jon Calabria

LAND 6310	Landscape Ecology: Materials and Processes	Fall semester every year	None	Alfie Vick
LAND 6350	Ecological Landscape Restoration	Spring semester every year	None	Jon Calabria
LAND 6410	Field Sketching and Watercolor	Summer semester every year	Unknown	Brad Davis
LAND 6730	Issues and Practices in Sustainable Design	Spring semester every year	Unknown	Alfie Vick

*course is a Study Abroad option

SOCIAL COURSES

Course ID	Course Name	Offered	Prerequisites	Instructor
ANTH 8540	Conservation and Community	Spring semester every year	Permission of department	Pete Brosius
ENVE 6530	Energy and Environmental Policy Analysis	Every year	Permission of department	Jenna Jambeck
ENVM 6930/6930E	Environmental Law and Governmental Regulation	Fall semester every odd-numbered year	Not open to students with credit in ENVM(AAEC) 4930/6930 or AAEC(EHSC) 4250H or ENVM(ECOL)(FANR)(EHSC) 4770H or ENVM(EHSC) 4250/6250	Terence Centner
HPRB 7920	Health Behavior	When offered by Pam Orpinas	Permission of department	Pam Orpinas
PHIL(EETH) 6220	Environmental Ethics	Spring semester every even-numbered year	PHIL 2200 or any 3000-level PHIL course or permission of department	Sarah Wright
PHIL(EETH) 6250	Philosophy of Technology	Spring semester every odd-numbered year	Any 3000-level PHIL course or permission of department	Sarah Wright
PHIL 8900	Environmental Philosophy	Spring semester every year	Permission of department	Sarah Wright

ECONOMIC COURSES

Course ID	Course Name	Offered	Prerequisites	Instructor
ENVM 6250	Environmental and Public Health Law	Spring semester every year	Unknown	Terence Centner

ENVM 6800	Water Resources Economics and Management	Fall semester every year	Unknown	Jeff Mullen
ENVM 6930	Environmental Law and Governmental Regulation	Fall semester every odd-numbered year	Third year standing and (POLS 1101 or HIST 2111 or HIST 2112)	Terence Centner
FANR 6810	Natural Resources Law	Spring semester every year	None	Catherine Clutter
MIST 6550	Energy Informatics	Every year	None	Richard Watson

Appendix D. – Possible Affiliate Faculty

(These faculty have expressed interest in including their courses in certificate requirements or otherwise being involved in the implementation of the certificate.)

Dr. Sonia Altizer; Odum School of Ecology

Dr. Robert Beckstead; Poultry Science; College of Agriculture and Environmental Science

Dr. David Berle; Horticulture; College of Agriculture and Environmental Science

Dr. Bynum Boley; Warnell School of Forestry and Natural Resources

Dr. Peter Brosius; Anthropology; Franklin College of Arts and Science

Dr. Marie Claire Boudreau; Management Information Systems; Terry College of Business

Dr. Terence Centner; Agriculture and Applied Economics; College of Agriculture and Environmental Science

Dr. Scott Connelly; Odum School of Ecology

Dr. Catherine Clutter; Office of the VP for Instruction

Dr. Brad Davis; College of Environment and Design

Dr. Jeffrey Dorfman; Agriculture and Applied Economics; College of Agriculture and Environmental Science

Dr. Mark Farmer; Biological Sciences; Franklin College of Arts and Sciences

Dr. David Gattie; College of Engineering

Dr. Laura German; Anthropology; Franklin College of Arts and Sciences

Dr. John Gittleman; Dean of Ecology, Odum School of Ecology

Dr. Theodore Gragson, Anthropology; Franklin College of Arts and Sciences

Dr. Gary Green; Warnell School of Forestry and Natural Resources

Dr. Gary Grossman; Geography; Franklin College of Arts and Sciences

Dr. Cecilia Herles; Women's Studies; Franklin College of Arts and Sciences

Dr. Nicole Hurt; Communications; Franklin College of Arts and Sciences

Dr. Sungkyung Lee; College of Environment and Design

Dr. David Leigh; Geography; Franklin College of Arts and Sciences

Dr. Rhett Jackson; Warnell School of Forestry and Natural Resources

Dr. Jenna Jambeck; College of Engineering

Dr. Nicholas Magnan; Agriculture and Applied Economics; College of Agriculture and Environmental Science

Dr. William Miller; Crop and Soil Sciences; College of Agriculture and Environmental Science

Dr. Deepak Mishra; Geography; Franklin College of Arts and Sciences

Dr. *Jackie Mohan*; Odum School of Ecology

Dr. Jeffrey Mullen; Agriculture and Applied Economics; College of Agriculture and Environmental Science

Dr. Dan Nadenicek, Dean College of Environment and Design

Dr. Maria Navarro; Agricultural Leadership and Development, College of Agriculture and Environmental Science

Dr. Quint Newcomer, Director UGA Costa Rica, Odum School of Ecology

Dr. Nathan Nibbelink; Warnell School of Forestry and Natural Resources

Dr. Maureen O'Brien; College of Environment and Design

Dr. Suzanne O'Connell; Horticulture; College of Agriculture and Environmental Science

Dr. Pamela Orpinas; College of Public Health

Dr. Jim Porter; Odum School of Ecology

Dr. Stephan Ramos; College of Environment and Design

Dr. Todd Rasmussen; Warnell School of Forestry and Natural Resources

Dr. John Shramski; College of Engineering

Dr. Nicola Sochacka; College of Engineering

Dr. David Spooner; College of Environment and Design

Dr. Georgia Strange; Lamar Dodd School of Art

Dr. Michael Tarrent; Director, Global Programs in Sustainability, Warnell School of Forestry and Natural Resources

Dr. Richard Watson, Management Information Systems, Terry College of Business

Dr. Susan Wilde; Warnell School of Forestry and Natural Resources

Dr. Alan Wolk; Banking and Finance; Terry College of Business

Dr. Tianwei Zhang; Economics; Terry College of Business

Dr. Anne Marie Zimeri; Environmental Health Sciences; School of Public Health

Appendix E. – Letters of Support

(The Interdisciplinary Certificate in Sustainability is supported by multiple UGA colleges and schools, including College of Agricultural and Environmental Sciences, Franklin College of Arts and Sciences, Terry College of Business, Odum School of Ecology, College of Engineering, College of Environment and Design, College of Family and Consumer Sciences, Warnell School of Forestry and Natural Resources, College of Public Health, School of Social Work. Letters of Support are attached.)