



The University of Georgia®

University Council
Athens, Georgia 30602

January 3, 2013

UNIVERSITY CURRICULUM COMMITTEE – 2012-2013

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Dr. Rodney Mauricio (Sciences)

Business - Dr. William D. Lastrapes

Ecology - Dr. James W. Porter

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Family and Consumer Sciences - Dr. Silvia Giraud

Forestry and Natural Resources - Dr. Sarah F. Covert

Journalism and Mass Communication - Dr. Alison F. Alexander

Law – No representative

Pharmacy - Dr. Keith N. Herist

Public and International Affairs - Dr. Robert Grafstein

Public Health – Dr. Marsha C. Black

Social Work – Dr. Kristina Jaskyte

Veterinary Medicine - Dr. Scott A. Brown

Graduate School - Dr. Tracie E. Costantino

Ex-Officio – Provost Jere W. Morehead

Undergraduate Student Representative – Mr. Pranay Udutha

Graduate Student Representative – Mr. Garrett Jaeger

Dear Colleagues:

The attached proposal to offer a new major in Soil, Water, and Environmental Sciences (M.S., online) in collaboration with other universities will be an agenda item for the January 9, 2013, Full University Curriculum Committee meeting.

Sincerely,

David E. Shipley, Chair
University Curriculum Committee

cc: Provost Jere W. Morehead
Dr. Laura D. Jolly



The University of Georgia

Graduate School

November 16, 2012

Provost Jere Morehead
Senior Vice President for Academic
Affairs and Provost
Administration Bldg.
Campus

Dear Provost Morehead:

At the Graduate Council meeting on November 14, 2012, the following proposal was approved:

Master of Soil, Water, and Environmental Sciences

This proposal is attached for your review. I am pleased to forward this request to you with my endorsement. Please let me know if you have any questions.

Sincerely,

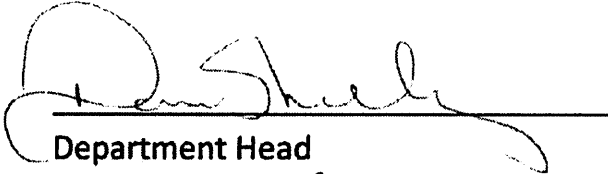
Maureen Grasso
Dean

MG:lcj

C: Dean Scott Angle
Dr. Joe Broder
Ms. Fiona Liken
Dr. David Radcliffe

APPROVAL PAGE
COLLEGE OF AGRICULTURAL AND ENVIRONMENTAL SCIENCES
CURRICULUM PROPOSALS

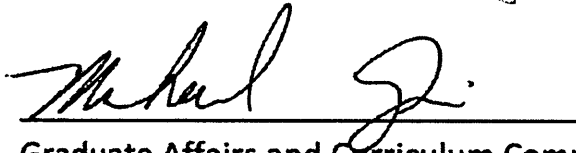
Proposal: Master of Soil, Water, and Environmental Sciences



Department Head

11-1-12

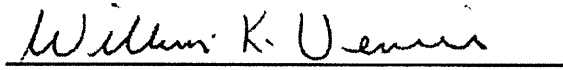
Date



Graduate Affairs and Curriculum Committee Chair

11-2-12

Date



Faculty Council Executive Committee Chair

2 November 2012

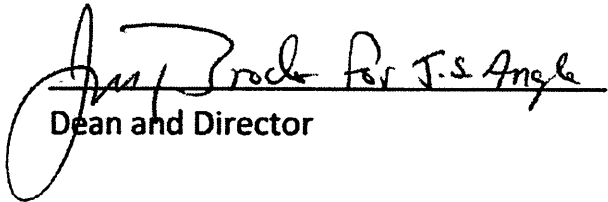
Date



Associate Dean for Academic Affairs

11-2-12

Date



Dean and Director

11-5-12

Date



The University of Georgia

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

November 8, 2012

Dean Maureen Grasso
Graduate School
400 Michael Bldg.
320 Clayton St.
CAMPUS

Dean Grasso:

With this letter I am indicating my support for the Master of Soil, Water, and Environmental Sciences that has been proposed by faculty in the Crop and Soil Sciences Department. This program will offer an online degree to place-bound students through a collaborative effort with faculty at North Carolina State University, Clemson University, Auburn University, University of Kentucky, and Texas Tech University. I am supportive of faculty who wish to offer courses on-line for this program.

Our proposed model is for graduate students to pay regular in-state tuition through the normal registration and fee payment process. That is, students will pay the same tuition for schedules that include AG*IDEA courses taught by faculty at other institutions. The CAES Office of Academic Affairs will pay any additional AG*IDEA fees. Fees will be paid from allocations to the college, excess revenues generated by UGA faculty teaching AG*IDEA courses to students at other institutions and/or salary savings from UGA faculty positions that may not be filled with the availability of AG*IDEA courses to meet program requirement needs.

Sincerely,

J. Scott Angle
Dean and Director

JSA/alc



The University of Georgia

Daniel B. Warnell School of Forestry and Natural Resources
Associate Dean for Academic Affairs

November 8, 2012

Dr. David Radcliffe
Crop and Soil Sciences
University of Georgia
CAMPUS MAIL

Dear Dr. Radcliffe:

Per our conversation earlier this week, I'm writing to indicate that the Warnell School of Forestry and Natural Resources is supportive of your proposed non-thesis Masters degree in soil, water and environmental science, which would be offered on-line via AgIdea - the Great Plains Coalition. Our school will be supportive of faculty that wish to offer on-line courses in support of this program, provided that the on-line courses do not supplant courses that Warnell needs to offer on-campus.

I wish you good success in establishing this program as I think it will provide graduate students in a variety of locations with opportunities to advance their knowledge of the environmental sciences.

Sincerely yours,

Sarah F. Covert
Associate Dean for Academic Affairs & Professor

Prospectus for New Degree Program

Institution: University of Georgia

Institutional Contact: Dr. Jere Morehead, Senior Vice President for Academic Affairs

Date of Submission: October 14, 2012

Program Information

Degree: Master's Degree in Soil, Water, and Environmental Sciences

Will program be offered 50% or more online?: Yes

Justification of Need:

Over the next several decades increasing demand for new professionals in soil, water, and environmental sciences (SWES), as well as continuing education for practicing professionals, will require enhanced access to higher education and professional development opportunities. The target audience for the graduate distance education programs in SWES primarily includes professionals employed in industry, consultants, educators, and public service professionals. A national audience is targeted with an international audience also being a possibility.

A survey was conducted in August 2005 by NC State University Distance Education and Learning Technology Applications to assess potential interest in the proposed Masters of Soil, Water, and Environmental Sciences non-thesis degree program by practicing professionals in NC associated with USDA-NRCS, NCSU Cooperative Extension, and members of the NC Soil Science Society. Of nearly 500 surveys distributed, 122 were returned. Eighty seven percent of the respondents indicated they would benefit professionally by completion of an advanced degree, and 97% indicated that distance learning would be a viable alternative to traditional on-campus degree programs.

Despite industry need or demand, colleges and universities have difficulty reallocating existing or identifying new resources to hire the critical mass of faculty needed to offer high-quality academic programs in emerging fields. By partnering, colleges and universities can leverage their existing areas of expertise and thereby implement collaborative, interdisciplinary distance education programs to meet the diverse demand for postsecondary education in SWES. More specifically, students participating in this program will take graduate courses from several of the Universities participating in this program.

This degree program addresses Goal 2, Strategy A, of the Graduate School Strategic Plan 2020, i.e., "Encourage and support efforts to offer innovative and interdisciplinary research and learning opportunities for graduate students" including online education. It also addresses Strategic Direction II of the University Strategic Plan 2020, i.e., Enhancing graduate and professional programs: "Offer increased access to University of Georgia graduate education through extended campus educational programs and online education."

No other program exists within the USG that offers a similar degree online.

Formal Proposal for New Degree

Institution: University of Georgia

Institutional Contact: Dr. Jere Morehead, Senior Vice President for Academic Affairs

Date of Submission: October 14, 2012

College/School/Division: College of Agricultural and Environmental Sciences

Department: Crop and Soil Sciences

Departmental Contact: Dr. David Radcliffe

Name of Proposed Program: Soil, Water, and Environmental Sciences

Degree: Master's

CIP Code:

Anticipated Implementation Date: Fall Semester, 2013

1. Justification of Need:

Over the next several decades increasing demand for new professionals in soil, water, and environmental sciences (SWES), as well as continuing education for practicing professionals, will require enhanced access to higher education and professional development opportunities. The target audience for the online graduate program in SWES primarily includes professionals employed in industry, consultants, educators, and public service professionals. A national audience is targeted with an international audience also being a possibility.

Developing a comprehensive degree program through DE would serve a rapidly growing demand for graduate education related to SWES professions. Several academic departments in the land grant university system offer *non-thesis* Master of Science (M.S.) degrees that require students to complete coursework but do not require students to conduct a traditional research project. Enrollment in non-thesis M.S. programs is generally low because most people interested in these programs are practicing professionals and are unable to simultaneously accommodate career, family, and on-campus academic responsibilities in the normal 18- to 24-month schedule associated with a traditional M.S. degree. An online learning program leading to a non-thesis degree would serve this growing demand, providing place-bound students with access to a graduate degree with a wide range of interdisciplinary courses taught by the best teachers in the region.

A survey was conducted in August 2005 by NC State University Distance Education and Learning Technology Applications to assess potential interest in the proposed Master's of Soil, Water, and Environmental Sciences non-thesis degree program by practicing professionals in NC associated with USDA-NRCS, NCSU Cooperative Extension, and members of the NC Soil Science Society. Of nearly 500 surveys distributed, 122 were returned. Eighty-seven percent of the respondents indicated they would benefit professionally by completion of an advanced degree, and 97% indicated that distance learning would be a viable alternative to traditional on-campus degree programs.

Despite industry need or demand, colleges and universities have difficulty reallocating existing or identifying new resources to hire the critical mass of faculty needed to offer high-quality academic programs in emerging fields. By partnering, colleges and universities can leverage their existing areas of expertise and thereby implement collaborative, interdisciplinary distance education programs to meet the diverse demand for postsecondary education in SWES. See Appendix C for a sample program of study.

No other program exists within the USG that offers a similar degree online.

2. Program Description and Objectives

This degree program addresses Goal 2, Strategy A, of the Graduate School Strategic Plan 2020, i.e., “Encourage and support efforts to offer innovative and interdisciplinary research and learning opportunities for graduate students” including online education. It also addresses Strategic Direction II of the University Strategic Plan 2020, i.e. Enhancing graduate and professional programs: “Offer increased access to University of Georgia graduate education through extended campus educational programs and online education.”

The objective of the program is to offer a non-thesis interdisciplinary M.S. degree in Soil, Water, and Environmental Sciences (SWES) to non-traditional students who are “place bound” and cannot pursue a degree on campus. The graduate degree program will be comprised of required core courses in biology, chemistry, physics, hydrology, and pedology, in addition to electives that provide flexibility to tailor the degree program to meet individual interest and career needs.

The courses will be offered online from University of Georgia faculty and from cooperating faculty at Auburn University, Clemson University, University of Kentucky, North Carolina State University, and Texas Tech University as part of the AG*IDEA program (Agriculture Interactive Distance Education Alliance, <http://www.agidea.org/>). AG*IDEA is an affiliate of the Great Plains Interactive Distance Education Alliance (Great Plains IDEA). The purpose of Great Plains IDEA is to enable member institutions to offer educational programs with other institutions and thereby give students and professionals more access to high quality education. Through this alliance, place-bound students will have access to a graduate degree with a wide range of interdisciplinary courses taught by the best teachers in the region. Please see section 14, “Faculty,” on page 9.

Courses offered via online learning by collaborating universities must meet their university approval standards and be processed through the UGA CAPA System after first being reviewed

by departmental faculty. Our department has evaluated the syllabi of the courses and vita of faculty teaching courses at collaborating universities that are similar to courses taught in our department. We have approved these courses, and they will be submitted for approval via the CAPA system. A similar process will be followed for courses that correspond to courses in other departments. For example, we will seek the approval of the Statistics Department faculty for the statistics course taught at Auburn and ask that they submit it via the CAPA system.

The proposed graduate degree program will create a unique opportunity for industry personnel, extension educators, and other professionals to enhance the professional skills and expertise essential to protecting the quality of our natural resources while sustaining economic opportunities. The program builds the human capacity and knowledge in agriculture and the environment that is essential to sustaining healthy communities and the nation. The collaborative, multi-university program will assure a high quality of education in SWES because students will have access to faculty experts at highly respected institutions throughout the U.S., providing a breadth and depth of courses that are significantly greater than through traditional degree and certificate programs.

3. Program Fit

This program does not duplicate existing offerings in the University System because a distance learning program in SWES is not available. A comprehensive degree program through distance education will serve a rapidly growing demand for graduate education related to SWES professions. The Crop and Soil Sciences Department at UGA offered a non-thesis Master of Crop and Soil Sciences from 1997 to 2010, but only five students enrolled in the program. Most people interested in the program were practicing professionals, such as county extension agents, and were unable to simultaneously accommodate career, family, and on-campus academic responsibilities. The proposed internet-based distance learning program leading to a non-thesis M.S. degree will meet the needs of today's students and serve this growing demand.

4. Curriculum:

The academic standards for this program are the same as a conventional degree offered at UGA. For courses offered at UGA, these courses must be approved through the standard procedure, including going through CAPA for an E suffix. Courses offered via distance learning by collaborating universities must meet their university approval standards and be processed through the UGA CAPA system. In this way, the program provides the appropriate rigor for the degree awarded. The breadth of the course offerings is greater than a conventional degree because courses that are not taught at UGA are available from other universities. All of the courses in the program are appropriate for distance delivery. Some courses will include a laboratory experience part of the curriculum. Various accommodations are made for these experiences, including the use of videos, lab experiences at satellite campuses, and alternative home lab experiments. These are common approaches supported by scholarly work on how to teach science online¹.

¹ Kennepohl, D. and L. Shaw. 2010. Accessible Elements: Teaching Science Online and at a Distance. AU Press, Athabasca University, Edmonton, Alberta.

The proposed curriculum for the Master's degree (36 credit hours) requires students to choose four out of five general core courses (soil microbiology, soil chemistry, soil physics, hydrology, and soil morphology). A seminar course (1 credit hour), one course in statistics (3 credit hours), and a special problems course (3 credit hours) are also required. The remaining 14-17 hours must be chosen from electives grouped into three areas: 1) resource management, 2) technology and analytics, and 3) policy and law. A list of core and elective courses is shown in Appendix A. A schedule for core courses is shown in Appendix B. The core courses will be offered at least once every year. Prerequisites for these courses are similar to those in our standard (thesis required, not online) MS in Soil Science and similar programs in other universities.

The special problems/internship course will be designed to provide students with exposure to the research experience and training in problem solving. For example, students who enroll in this program might spend an internship working a summer with an extension specialist, commercial consultant, or with a researcher. The working professionals will guide the student and provide a written evaluation to the student's graduate committee at the end of the internship. For students who are employed full time, it may be possible to find an area of their work that could be used for a research project. For example a county agent could design and execute a program to assess the water quality of a stream in their county. Each UGA student will have an advisor and a graduate committee and will take a comprehensive final written and oral exam in the last semester of their program. The exams will test for mastery in the core areas, statistics, and the subject area chosen for the special problems/internship course. The oral exam will be given by the student's advisory committee at the home institutions. Test questions will be developed and graded by the committee but may include questions and grading from faculty at collaborating universities if the outside expertise is required. Oral exams will generally be given in person for students in Georgia, but could be done via Skype for international students. The graduate committee will consist of four faculty members, one of whom could be from a collaborating university.

A typical student might take two courses each semester, including summer. A sample program of study is presented in Appendix C. The time to degree completion would be 2½ years.

The primary delivery mode for this program will be via classroom instruction and internet. UGA courses will be delivered via internet using the eLearning platform. Courses taught by collaborating universities via the internet will use their own platforms. Students will have to adapt to the various platforms used at collaborating universities. Instruction will be delivered in both synchronous and asynchronous format. For UGA courses, some students will view the lecture in real-time similar to webinars and be able to communicate with the instructor via chat or audio. Other students will view the lecture as an archived video file. The program will have variable locations of delivery (collaborating universities). The UGA classes will be delivered from various classrooms with video technology. Asynchronous interaction will include email and on-line discussions via eLearning.

Students will have access to all of the online library and information sources available through their UGA MyID. Student E-services provides a web portal to all students for a number of resources, including eLearning (<https://my.uga.edu/uPortal/render.userLayoutRootNode.uP>). The

UGA Libraries Distance Learning Service offers catalogues such as GALILEO and research guides. The University Bookstore is also available via the web.

A mentoring program will be developed to ensure that students are making sufficient progress and not falling through the cracks. This is especially important since online students could become “out of sight, out of mind.” Students will be subject to the continuous enrollment policy of the Graduate School. The CRSS Graduate Coordinator will track the number of courses taken by each student and an annual progress report from the student’s faculty advisor. We will also schedule an annual “campus visit” day during the summer when we will arrange for all of the students to visit faculty and tour department facilities.

At the present time, three faculty members will be offering courses by distance learning from UGA:

- David Radcliffe, Professor, Crop and Soil Sciences
- Mussie Habteselassie, Assistant Professor, Crop and Soil Sciences
- Terry Centner, Professor, Agricultural and Applied Economics

Most of the distance learning courses will be available through collaborating universities. The number of UGA faculty offering courses for the program is expected to rise to five or more in the near future. The faculty members offering courses are familiar with the eLearning platform tools for distance learning. They have also attended a series of symposia on distance learning sponsored by the College of Agricultural and Environmental Sciences over the past two years.

The prerequisite technology competencies, skills and equipment requirements are familiarity with web browsers and standard office software (Word, Powerpoint, Excel, etc.) that are expected for other graduate students. There are no residency requirements associated with this program. This program is compatible with the UGA affirmative action plan in that it provides access to disadvantaged students who may not be able to attend classes on campus due to physical or economic limitations. The institutional guidelines for in-state and out-of-state students are the same.

The proposed degree incorporates the Principles of Good Practice set forth by Chickering and Gamon (1991)². These include frequent contact with students, student teamwork, active learning, prompt feedback, time on task, high expectations, and respect for diverse talents and ways of learning. Contact with students will be maintained via email and discussion groups. The internship, as well as course projects, are designed to develop active learning skills and teamwork (today’s students have little difficulty communicating via internet and phone technology). Teachers, advisers, and graduate committees will provide prompt feedback and emphasize time on task, high expectations, and respect for diverse approaches to learning.

² Chickering, A.W., and Z.F. Gamson. 1991. Appendix A: Seven principles for good practice in undergraduate education. *New Directions for Teaching and Learning*. 47:63-69.

5. Admissions Criteria

Admission guidelines for this program will be the same as on-campus students in our department's other Master's degree (MS in Crop and Soil Sciences which requires a thesis, not the non-thesis MS which was cancelled):

- Overall GPA ≥ 3.0 for courses taken for the baccalaureate degree
- Competitive GRE (verbal + quantitative)
- Transcripts
- Adequate Test of English as Foreign Language (TOEFL) score for international students
- Three letters of reference

6. Availability of Assistantships

Assistantships will not be offered to students in this program since it is a non-thesis degree. Since students are not on campus, they will not be able to assist in teaching courses or with research outside of their own project.

7. Student Learning Outcomes

At the completion of their program, students will have acquired:

- An extensive knowledge of the sciences and technology that support research, education, and technological innovation in soil, water, and environmental sciences
- Familiarity with the literature, current concepts, and experimental and analytical methods that support research, education, and technological innovation in soil, water, and environmental sciences, and in their application to agriculture and the environment
- Skills in critical and analytical thinking and in communication that may be applied to research, education, industry, government, and public
- Those elements of professionalism necessary for rewarding and developing careers in soil, water, and environmental sciences in research, education, production agriculture, agribusiness, government, and public service

8. Employment Opportunities

In many cases, the students in this program will already be employed. That is one of the reasons why they cannot pursue a traditional degree. One of the primary targets of this program (and our previous non-thesis Master's program that was not online) is county agents seeking a graduate degree. The degree expands their knowledge base and enhances their chances for promotion. According to the Association of Natural Resource Extension Professionals (<http://www.anrep.org/directory>), there are 26 county agents in Georgia and 180 county agents in the Southeast region working in the area of natural resources who might therefore be interested in this degree.

The SWES MS degree and graduate certificate programs will be accessible through the AG*IDEA website (www.agidea.org) listed among other Ag*IDEA programs. Student evaluation comments and testimonials will be documented and included on the website as the program progresses. The SWES Executive Committee will develop a one-page brochure that can

be attached to email communications. We will provide news releases to professional society news magazines, such as CSA News, the news magazine of the American Society of Agronomy, the Crop Science Society of America and the Soil Science Society of America. Member universities will advertise the program through announcements and news stories in college newspapers and in press releases to state newspapers and other agriculture related organizations. We will send email announcements to state cooperative extension services, state offices of USDA Natural Resources Conservation Service, and professional associations, such as soil classifiers associations, turfgrass associations, golf course superintendent associations, nursery and landscape associations, certified crop advisors, farmer associations and networks, all of whom maintain email listings. We will also send announcements to state agribusiness councils, environmental departments and health departments.

Links to www.agidea.org will be available on the following websites:

- Soil Science Society of America (<https://www.soils.org>)
- American Society of Agronomy (<https://www.careerplacement.org/colleges>)
- Ecological Society of America (<http://www.esa.org>)
- American Geological Institute (<http://www.agiweb.org/education>)
- Society of Wetland Scientists (<http://www.sws.org/colleges>)
- American Society of Agricultural and Biological Engineering (<http://asabe.org>)

Other websites will be added as the program develops. In addition, links on state and regional level organization websites will be included (i.e., NC Soil Science Society; Western Soil Science Society).

9. Program Review

The proposed program will be reviewed as part of the University of Georgia program review process administered by the Office of Academic Planning. Reviews are conducted by faculty on a seven-year cycle.

10. Administration of the Program

The program will be housed in the Department of Crop and Soil Sciences. This degree will be offered through the AG*IDEA program (Agriculture Interactive Distance Education Alliance, <http://www.agidea.org/>). AG*IDEA is an affiliate of the Great Plains Interactive Distance Education Alliance (Great Plains IDEA). The purpose of Great Plains IDEA is to enable member institutions to offer educational programs with other institutions and thereby give students and professionals more access to high quality education. The Great Plains IDEA currently has seven online master's degree programs. AG*IDEA currently has one online graduate certificate program and several programs in development.

The educational outcomes of the degree program will be measured using course grades, the oral and written exams, and post interviews with employers. The Crop and Soil Sciences Department will monitor the effectiveness of the program in terms of numbers of students engaged in the new distance learning degree, the number of degrees conferred, attrition, and time to completion.

Course evaluations will be conducted using the online questionnaire each term with every course.

11. Waiver to Degree-Credit Hour

The program does not exceed the maximum credit hour requirements.

12. Accreditation

The online courses offered from UGA will go through the standard course approval process. The admissions, programmatic, and graduation requirements are the same as the on-campus M.S. program with the exception that a special problem/internship course is substituted for a thesis.

13. Projected Enrollment

The projected enrollment is based on inquiries we have received from prospective students and the experience of our collaborating universities. Enrollment will not be cohort-based. We assumed that UGA students would take six courses, two of which would be UGA courses, and courses are 3 hours to estimate the credit hours generated. As such, two new students in the first year will each take two UGA courses and generate 12 total credit hours. We assumed that two students would graduate at the end of the third year and two more at the end of the fourth year. Students at collaborating universities who enroll in a UGA course also generate credit hours. We assumed that ¼ of the students at collaborating universities took one UGA course per year.

	First Year FY 2014	Second Year FY 2015	Third Year FY 2016	Fourth Year FY 2017
I. ENROLLMENT PROJECTIONS				
Student Majors				
Shifted from other programs	0	0	0	0
New to UGA	2	2	2	2
Total UGA Majors	2	4	6	6
Enrolled at collaborating universities	18	40	65	70
Course Sections Satisfying Program Requirements				
Previously existing ecourse at UGA	0	0	0	0
New ecourse at UGA	2	4	6	7
Total Program Course Sections	2	4	6	7
Credit Hours Generated by Those Courses				
Existing enrollments at UGA	0	0	0	0
New enrollments at UGA	12	12	12	12
Total Credit Hours From UGA Students	12	24	36	36

Enrollments at collaborating universities	14	30	49	53
Total Credit Hours	26	54	85	89
UGA DEGREES AWARDED	0	0	2	2

14. Faculty

Faculty in the Crop and Soil Sciences Department, School of Forest and Natural Resources, and Department of Agricultural and Applied Economics at UGA will be involved in teaching online courses and serving on graduate student committees. Currently, only two courses (Soil Physics and Environmental Law) are available online (e-courses). Another course (Soil Erosion and Conservation) has been submitted for approval. An online version of our Special Problems course (which satisfies the research/internship requirement of this non-thesis degree) will be submitted within the year. It is expected that online versions of three other courses (Environmental Chemistry, Nutrient Cycling, and Quantitative Hydrology) will be developed by participating faculty in the next three years. The additional workload for faculty will be converting their courses to e-courses and teaching/advising new graduate students. The existing graduate classes are not over-enrolled and can accommodate the additional students projected for the proposed degree.

Faculty from collaborating universities will also be involved in teaching online courses. They will be nominated through standard UGA procedures for adjunct faculty appointments in the appropriate departments at UGA.

Faculty Name	University	Rank	Highest Degree	Degrees Earned	Academic Discipline	Teaching EFT
Miguel Cabrera	UGA	Professor	PhD	MS, BS	Nutrient cycling	0.597
Terry Centner	UGA				Environmental law	0.300
Mussie Habteselassie	UGA	Assistant Professor	PhD	MS, BS	Soil microbiology	0.300
Larry Morris	UGA	Professor	PhD	MS, BS	Forest soils	0.500
David Radcliffe	UGA	Professor	PhD	MS, BS	Soil physics	0.385
Todd Rasmussen	UGA	Professor	PhD	MS, BS	Hydrology	0.600
Aaron Thompson	UGA	Assistant Professor	PhD	MS, BS	Environmental chemistry	0.300
David Bransby	Auburn	Professor	PhD	MS, BS	Forage/livestock	0.130
Yucheng Feng	Auburn	Associate Professor	PhD	MS, BS	Soil microbiology	0.250
Julie Howe	Auburn	Assistant Professor	PhD	MS, BS	Soil chemistry	0.500
Dennis Shannon	Auburn	Professor	PhD	MS, BS	Agronomy	0.200
Edzard Van Santen	Auburn	Professor	PhD	MS, BS	Plant breeding	0.200
Wesley Wood	Auburn	Professor	PhD	MS, BS	Nutrient cycling	0.460

Marc Coyne	UK	Professor	PhD	MS, BS	Soil microbiology	TBD
Aziz Amoozegar	NCSU	Professor	PhD	MS, BS	Soil physics	0.200
John Classen	NCSU	Associate Professor	PhD	MS, BS	Waste management	0.200
Garry Grabow	NCSU	Associate Professor	PhD	MS, BS	Irrigation engineering	0.200
John Havlin	NCSU	Professor	PhD	MS, BS	Soil fertility	0.590
Joshua Heitman	NCSU	Assistant Professor	PhD	MS, BS	Soil physics	0.400
Gregory Jennings	NCSU	Professor	PhD	MS, BS	Water quality	0.200
Wayne Skaggs	NCSU	Professor	PhD	MS, BS	Water management	0.100
Michael Vepraskas	NCSU	Professor	PhD	MS, BS	Pedology	0.120
Richard Zartman	Texas Tech	Professor	PhD	MS, BS	Soil physics	0.250

15. Fiscal, Facilities, Enrollment Impact, and Estimated Budget

By agreement among the AG*IDEA and Great Plains IDEA institutions, a common price is set each year and charged for all courses. This eliminates the question of in-state and out-of-state tuition depending on where the student is located and/or at which university the student is enrolled. The common price for the 2012-2013 academic year (fall, spring and summer) is \$485 per graduate hour. This includes all instruction and examinations. Books, student travel, and other course materials are not included. Participation in Alliance programs requires that students be admitted to one of the partner universities. Each university has an application fee. No other course fees are assessed by AG*IDEA. The revenue is distributed as follows: 75% goes to university where the course is taught, 12.5% to the university where the student enrolled, and 12.5% goes to AG*IDEA. Expected revenue in the first three years of implementation is given below. The calculations assume that UGA students take 6 hours of UGA courses each year and 25% of the students at collaborating universities take 3 hours of UGA courses each year.

Our proposed model is for graduate students to pay regular in-state tuition through the normal registration and fee payment process. That is, students will pay the same tuition for schedules that include AG*IDEA courses taught by faculty at other institutions. The CAES Office of Academic Affairs will pay any additional AG*IDEA fees. Fees will be paid from allocations to the college, excess revenues generated by UGA faculty teaching AG*IDEA courses to students at other institutions and/or salary savings from UGA faculty positions that may not be filled with the availability of AG*IDEA courses to meet program requirement needs.

It's important to realize that this program represents additional revenue that would not be available otherwise. The targeted students cannot enroll in our conventional degree program due to location limitations. This is not a matter of students who would normally pay tuition for a conventional Master's degree opting to take the distance learning degree.

There are no additional line costs for delivering this program. No tuition adjustments will need to be requested to support the delivery of this program. There will be no operating budget requests for this program that would exceed normal operating budget guidelines. Existing classrooms with video technology will be used. No modifications required for existing facilities to establish and maintain the alternative delivery of the program are required.

Almost all of the costs for implementing this program are currently built into the Crop and Soil Sciences Department budget in terms of teaching, advising, and administrative EFT since the courses will be offered by existing faculty. The only new funding requested is \$4,000 per year for the first three years of implementation. This provides \$2,000/course for technical assistance and special laboratory equipment for distance learning. It assumes that two new UGA courses will be offered in the second and third year of implementation.

	First Year FY 2014	Second Year FY 2015	Third Year FY 2016	Fourth Year FY 2017
I. ENROLLMENT PROJECTIONS				
Total Majors Enrolled at UGA	2	4	6	6
Total Majors Enrolled at Collaborating Universities	18	40	65	70
Total Credit Hours Students Enrolled at UGA	12	24	36	36
Total Credit Hours Students Enrolled at Collaborating Universities	14	30	49	53
DEGREES AWARDED	0	0	2	2

II. EXPENDITURES	EFT Dollars	EFT Dollars	EFT Dollars	EFT Dollars
Personnel -- reassigned or existing positions				
Faculty	\$0	\$0	\$0	\$0
Part-time Faculty	\$0	\$0	\$0	\$0
Graduate Assistants	\$0	\$0	\$0	\$0
Administrators	\$0	\$0	\$0	\$0
Support Staff	\$0	\$0	\$0	\$0
Fringe Benefits	\$0	\$0	\$0	\$0
Other Personnel Costs	\$0	\$0	\$0	\$0
Total Existing Personnel Costs	\$0	\$0	\$0	\$0
Personnel -- new positions				
Faculty	\$0	\$0	\$0	\$0
Part-time Faculty	\$0	\$0	\$0	\$0
Graduate Assistants	\$0	\$0	\$0	\$0

Administrators	\$0	\$0	\$0	\$0
Support Staff	\$0	\$0	\$0	\$0
Fringe Benefits	\$0	\$0	\$0	\$0
Other Personnel Costs	\$0	\$0	\$0	\$0
Total New Personnel Costs	\$0	\$0	\$0	\$0

Start-up Costs (one-time expenses)

Library/learning resources	\$0	\$0	\$0	\$0
Equipment	\$0	\$0	\$0	\$0
Support/Operating for new courses	\$4,000	\$4,000	\$4,000	\$2,000
Physical Facilities: construction or major renovation	\$0	\$0	\$0	\$0
Total One-time Costs	\$4,000	\$4,000	\$4,000	\$2,000

Operating Costs (recurring costs -- base budget)

Supplies/Expenses	\$0	\$0	\$0	\$0
Travel	\$0	\$0	\$0	\$0
Equipment	\$0	\$0	\$0	\$0
Library/learning resources	\$0	\$0	\$0	\$0
Other	\$0	\$0	\$0	\$0
Total Recurring Costs	\$0	\$0	\$0	\$0

GRAND TOTAL COSTS	\$4,000	\$4,000	\$4,000	\$2,000
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III. REVENUE SOURCES

Sources of Funds	\$0	\$0	\$0	\$0
Reallocation of Existing Funds	\$0	\$0	\$0	\$0
New Student Workload	\$0	\$0	\$0	\$0
Tuition for Enrollment (12.5%)	\$728	\$1,455	\$2,183	\$2,183
Tuition for Students taking UGA Courses (75%)	\$9,458	\$19,643	\$30,919	\$32,374
Federal Funds	\$0	\$0	\$0	\$0
Other Grants	\$0	\$0	\$0	\$0
Student Fees	\$0	\$0	\$0	\$0
Other	\$0	\$0	\$0	\$0
New State Allocation Requested for Budget Hearing	\$0	\$0	\$0	\$0

Nature of Funds

Base Budget
One-time funds

GRAND TOTAL REVENUES	\$10,185	\$21,098	\$33,101	\$34,556
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APPENDIX A – List of Core and Elective Courses

Core Courses (12-15 credits)

Soil physics	3 credits
Soil chemistry	3 credits
Soil microbiology	3 credits
Pedology	3 credits
Hydrology	3 credits

Electives (21-24 credits)

Courses in resource management, technology/analytics, and policy/law.

COURSE DESCRIPTIONS - Core Courses

* Course is taught at UGA and online version is being developed.

** Course is taught at UGA but online version has not been developed so it will be offered online at a collaborating university.

*** Course is not taught at UGA so it will be offered online at collaborating university.

Soil Physics (CRSS 6600E)

Physical characteristics of soils and porous media and principles underlying flow and distribution of water, air, and heat in soils.

Soil Chemistry *

Soil chemistry is designed to provide students with knowledge of basic soil chemical properties. Students will learn about the chemical composition of soil particles, weathering processes, ion adsorption and exchange reactions, acidity, salinity, and reduction-oxidation reactions.

Soil Microbiology **

Ecology, physiology, and biochemistry of soil microorganisms with emphasis on soil microbial processes that are important to environmental quality and soil productivity.

Soil Microbiology Lab **

Ecology, physiology, and biochemistry of soil microorganisms with emphasis on soil microbial processes that are important to environmental quality and soil productivity. (Course requires 5 consecutive days on campus for convenience of distance education students. Taught during Spring Break.)

Soil Morph., Genesis, Classification **

Chemical, physical and mineralogical parameters useful in characterizing soil. Genesis: soil-forming factors and processes. Classification: historical development and present concepts of soil taxonomy with particular reference to worldwide distribution of great soil groups as well as discussions of logical bases of soil classification.

Hydrology (choose one of the following 3 courses)

Intro. to Land & Water Engineering **

This course aims at equipping students with the engineering tools and knowledge needed for advanced courses in land and water engineering. The course will introduce concepts of the hydrologic cycle, precipitation, evapotranspiration, infiltration, surface runoff and open channel flow. Students will apply the aforementioned topics towards practical engineering problems and solutions.

Intro. to Fluvial Geomorphology **

Course provides an introduction to applied fluvial geomorphology as it relates to natural physical stream processes. Students learn about watershed hydrology, stream gage data analysis, bankfull stage identification, hydraulic geometry relationships, stream channel assessment and classification, stream stability and channel evolution. Students conduct independent field studies to measure stream morphology, identify bankfull stage, characterize stream bank erosion, analyze substrate, and assess channel stability. Several stream classification systems will be reviewed including the Rosgen classification system for natural streams. Students will also learn how to graph and manipulate stream morphology parameters from field survey data and aerial photos.

Additional Required Courses**Statistical Methods ****

Course covers the role and application of statistics in research. Students gain knowledge and skills in statistical applications to include estimation, test of significance, analysis of variance, multiple comparison techniques, basic designs, mean square expectations, variance components analysis, simple and multiple linear regression and correlations, and nonparametric procedures.

Seminar **

Scientific articles, progress reports in research and special problems of interest to soil scientists reviewed and discussed. Oral and poster presentation techniques and skills developed.

Special Problems in Soil Science *

Faculty-sponsored short-term research projects or internship in the area of crop and soil sciences other than thesis or dissertation. Research/internship may be conducted in laboratory, greenhouse, or field.

COURSE DESCRIPTIONS - Elective Courses***Resource Management*** (soil, water, plants, nutrients)**Soil Resources and Conservation *****

The objectives are to provide sound principles and procedures for planning the wise use and management of soil resources for sustainable crop production, urban development and ecosystem protection. Topics include soil erosion (water, wind) and its control, soil quality, soil assessment for non-agricultural uses, wetlands, non-point source pollution, best management practices, and stormwater management.

Bioenergy and Environment ***

Students learn the role of bioenergy in reducing the environmental problems related to use of fossil fuels, certain agricultural practices related to production of bioenergy, and potential of bioenergy to stimulate rural economies.

Plant Nutrient Management **

Evaluation and application of theory to plant nutrient management; a study of nutrient needs and nutrient reactions in soil; and predicting nutrient need and response.

Plant-Water Relations ***

Comprehensive understanding of biophysical factors affecting water status of plant tissue and resultant physiological responses.

Soil Erosion and Conservation *

Mechanisms of soil erosion and sediment production; infiltration, runoff, and sediment transport in agricultural, forestry, and urban environments. Erosion and sediment control principles and practices. Impact of erosion and sediment on productivity and environmental quality.

Soil Fertility **

Soil conditions affecting plant growth and the chemistry of soil and fertilizer interrelationships. Factors affecting the availability of nutrients. Methods of measuring nutrient availability.

Nutrient Management *

Lectures and problems illustrate principles of nutrient management as related to soil or growth media, plant, fertilizer practices, management systems and environment.

Soils and Environmental Quality ***

Role of soils in biogeochemical cycling of major elements and compounds of environmental concern; interactions of pollutants with soils and aquatic and atmospheric environments; methods to minimize or correct pollution; risk assessment.

Wetland Soils ***

Wetland definitions, concepts, functions and regulations; chemical, physical and morphological characteristics of wetland soils. Wetland soil identification using field indicators and monitoring equipment; principles of wetland creation, restoration and mitigation.

Inter. Agronomic Development ***

Overview of world food situation. Role of assistance programs and international and national research centers in the development of agronomic research and outreach for developing countries.

Pesticides **

Advanced study of the registration, development, and legal use of pesticides.

Soils and Crops in Arid Lands ***

Potentials for utilizing soils, rainfall patterns, and plant characteristics for crop production in arid lands.

Technology & Analytics

Experimental Methods **

Experimentation in the agricultural sciences including experimental techniques, interpretation of research data, use of library references and preparation of publications. Problems, assigned readings and lectures.

Applied Geostatistics ***

Application of regionalized variable theory to surface and subsurface land forms using semivariograms and kriging.

Quant. Agric. Remote Sensing ***

A general course in the theory and application of remote sensing to quantifying soil and vegetation characteristics relevant to agriculture and natural biosystems.

Instrumentation for Hydrologic Appl. **

Basic theory of instruments and measurements. Physical parameters of interest, available methods and sensors for assessment. Sensor characteristics. Dataloggers and sensor-datalogger communications. Data transfer, management, and processing. Emphasis on hydrologic and water quality research applications.

Precision Agriculture Technology ***

Overview of technology available for implementation of a comprehensive precision agriculture program. Topics include computers, GPS, sensors, mechanized soil sampling, variable rate control system, yield monitors, and postharvest processing controls. Applications of precision agriculture in crop planning, tillage, planting, chemical applications, harvesting and postharvest processing.

GIS Applications in Prec. Agriculture ***

Selection of a subject by each student on which to do research and write a technical report on the results. The individual may choose a subject pertaining to his or her particular interest in any area of study in biological and agricultural engineering.

Watershed Monitoring & Assessment **

Water measurement and structure sizing. Identification of water quality problems and water quality variable selection. Monitoring design, water quality sampling equipment, and sample collection and analysis. Statistical analysis and presentation of water quality data.

GIS in Hydro. & Water Qual. Modeling ***

Large scale (watershed, river basin, and regional) models such as Soil and Water Assessment Tool (SWAT) utilize GIS interfaces, which enable model users to access state and federal databases of soil, land use/land cover, and climatological data, generate model inputs, and finally present and analyze model predictions. Not intended as a detailed GIS course, rather an

introductory course for users of large scale hydrologic and water quality models utilizing GIS interfaces. Students expected to 1) access GIS databases and retrieve soils, land use/land cover, and weather data pertaining to a specific watershed/river basin; 2) process retrieved data to generate model inputs and; 3) use GIS spatial analysis tools to present and analyze predictions of a hydrologic and water quality model.

Policy & Law

Environmental Law and Governmental Regulation (ENVM(AAEC) 6930E)

Principles of law involved in environmental issues, externalities and market failures, environmental litigation, legislation, and administrative rulings. Environmental issues are related to statutory, administrative, and regulatory authorities.

Introduction to Total Maximum Daily Load Program ****

This course provides an introduction to Total Maximum Daily Load (TMDL) pollutant assessments in North Carolina and other areas of the United States. The process and procedures in developing and settling TMDL levels are discussed. Current approaches and examples of TMDL plans are presented. The role of water quality models in the TMDL process is also explored.

APPENDIX B – Schedule of Core Courses

Semester	Core	University Offering Course
Fall 2013	Soil Physics	UGA
	Soil Chemistry	Auburn
	Pedology	NC State
	Bioenergy & Environment	NC State
	Biomass & Energy	NC State
	Int. Agronomic Dev.	Texas Tech
	Soil Fertility	NC State
	Environmental Law	UGA
	Seminar	TBD
Spring 2014	Soil Physics	Texas Tech
	Soil Chemistry	Auburn
	Soil Microbiology	Auburn
	Pedology	NC State
	Environmental Soil Science	NC State
	Plant Water Relations	Texas Tech
	Soil Fertility	NC State
	Soil Conservation	UGA
	Seminar	TBD
Fall 2014	Soil Physics	UGA
	Pedology	NC State
	Soil Fertility	NC State
	Environmental Law	UGA
	Seminar	TBD

APPENDIX C – Sample Program of Study

MS in Soil, Water and Environmental Science – up to two courses per semester.

Semester	Course Type	Course Name	Institution	Course Credits
Year 1				
Fall 2013	Required	Statistical Methods	Clemson	3
	Core	Soil Chemistry	Auburn	4
SP 2014	Core	Soil Morphology, Genesis, Classification	NC State	3
	Core	Introduction to Land and Water Engineering	NC State	3
Su 2014	Elective	Soils and Environmental Quality	Auburn	3
Year 2				
Fall 2014	Core	Soil Physics	UGA	4
	Elective	Soil Erosion and Conservation	UGA	3
SP 2015	Core	International Agronomic Development	Texas Tech	3
	Required	Seminar	Auburn	1
	Elective	Bioenergy and the Environment	Auburn	3
SU 2015	Required	Special Problems in Soil Science	UGA	3
Year 3				
Fall 2016	Elective	Environmental Law and Regulations	UGA	3
Total Credits				36
Semesters:	7			
Years:	2 1/2			