CLEMSON UNIVERSITY **Curriculum and Course Change System - Print Minor Form** 000001

Change Minor: Food Science
Effective Catalog Year: 2013

.. **Change Minor Name to:**
X **Change Minor Requirements:**
Current Catalog Description: A minor in Food Science requires FD SC 214, 401, and eight additional credits in FD SC or NUTR courses numbered 300 or higher.
Proposed Catalog Description: A minor in Food Science requires FD SC 214, 401, and nine additional credits in FD SC or NUTR courses numbered 300 or higher.
Summary/ Explanation: The FD SC 401 Food Chem I course lab has been decoupled from the course and is not required for the minor. Thus the FD SC 401 Food Chem course is 3 credits at this time. The department faculty have therefore increased the additional credit section to nine from eight credits for the Food Science minor. Hours required for minor at 15 hours.

Form Originator: MCONDRA, Margaret Condrasky **Date Form Created:** 4/10/2012
Form Last Updated by: MCONDRA, Margaret Condrasky **Date Form Last Updated:** 4/10/2012
Form Number: 5003

Approval			
Margaret D Condrasky	4/10/12	Janice W. Harlocker	5/4/2012
Chair, Department Curriculum Committee	Date	Chair, Undergraduate Curriculum Committee	Date
	4/10/12		
Department Chair	Date	Chair, Graduate Curriculum Committee	Date
Robert J. Kaminski	4/12/12		
Chair, College Curriculum Committee	Date	Provost	Date
	4/12/12		6/11/12
College Dean	Date	President	Date 6/11/12

CLEMSON UNIVERSITY **Curriculum and Course Change System - Print New Course Form**

Course Abbreviation & Number:
X **New Undergraduate Course:** AG M- 219
.. **New Honors Course:** --
.. **New Graduate Course:** -

000002

Effective Term: 05/2012
Catalog Title: Agribusiness and Food Systems
Transcript Title: Ag and Food Systems
Fixed Credit Course: 3 (3,0)
Variable Credit Course: - (-), (-)

Method of Instruction	Course Modifier	General Education Designation
X A-Lecture Only	.. Pass/Fail Only	.. English Composition
.. B-Lab (w/fee)	X Graded	.. Oral Communication
.. D-Seminar	.. Variable Title	.. Mathematics
.. E-Independent Study	.. Creative Inquiry	.. Natural Science w/Lab
.. F-Tutorial (w/fee)	.. Repeatable	.. Math or Science
.. G-Studio	maximum credits:	.. A&H (Literature)
.. H-Field course		.. A&H (Non-Literature)
.. I-Study Abroad		.. Social Science
.. L-Lab (no/fee)		.. CCA
.. N/B-Lecture/Lab(w/fee)		.. STS
.. N/L-Lecture/Lab(no fee)		

Add cross-listing with the following child course(s):

Catalog Description: This course provides a general introduction to the major activities associated with the movement of agricultural and food products from producers to processors to consumers and the essential supply chain functions of buying, selling, transportation, storage, financing, standardization, pricing, and risk bearing.

Prerequisite(s): No

Projected Enrollment:
Year 1 - 10 Year 2 - 15 Year 3 - 20 Year 4 - 25

Required course for students in: No

Statement of need and justification based on assessment results of student learning outcomes: The agricultural supply chain system is vast and complicated. Its participants are as numerous as they are varied. Agricultural and food industry leaders have indicated that an in-depth understanding of the agribusiness and food systems is needed by students entering careers in their industry. The emphasis of this course will be on using updated materials from agricultural and food business firms to provide an overview of managerial concepts that allow successful decisions to be made under uncertain conditions and to describe how agricultural commodities progress through the food marketing system to become food products.

Textbook(s): Rhodes, V. James, Jan L. Dauve, and Joe Parcell. The Agricultural Marketing System, 6th ed. Holcomb Hathaway, Publishers, Scottsdale, AZ, 2007

Learning Objectives: Students will: (1) understand the supply chain principles and methods utilized by agribusiness firms and food processors; (2) become knowledgeable about the methods used by producers and food businesses to make their commodities more attractive to the market; (3) be able to quantify the input side (feed, fertilizer, farm equipment, irrigation, animal pharmaceuticals, livestock handling equipment, and horticultural supplies) and the output side of agricultural and food production, such as the post-harvest processing of vegetables, fruit, fiber, poultry, and meats; and (4) learn to analyze decisions and activities related to the output of agricultural and food enterprises including the distributors, marketers, packagers, and retailers of agricultural food and fiber.

Topical Outline: Agricultural Supply Chain (4 hrs)
The Competitive Environment (4 hrs)
Functions, Structure and Alternatives in the Ag Supply System (4 hrs)
Price Determination (3 hrs)
The Domestic Market for Food Products (3 hrs)
The International Logistics Components (3 hrs)
Pricing and Exchange Systems (3 hrs)
Providing Optimum Varieties and Quantities (3 hrs)
Transportation and Storage of Commodities (3 hrs)
Commodity Exchange Risk Components (3 hrs)
Leadership in Supply Chain (3 hrs)
Collective Action (3 hrs)
Processor Procurement Systems (3 hrs)
Food Service Systems (3 hrs)

Evaluation: Four exams will be administered, and all four exam scores (20% each) will be used in calculating final grades. Homework (20%) will focus on materials that may not be covered in class. They will be announced in advance and should be completed on the computer and e-mailed to the instructor. The course grading scale is A for 90-100%, B for 80-89%, C for 70-79%, D for 60-69%, and F for less than 59%.

Form Originator: WFERREI,Wilder Ferreira **Date Form Created:** 3/14/2012
Form Last Updated by: , **Date Form Last Updated:** 4/12/2012
Form Number: 4954

Approval

	4-12-2012		5/4/2012
Chair, Department Curriculum Committee	Date	Chair, Undergraduate Curriculum Committee	Date

000093

Patricia Clayton	4/12/12		
Department Chair	Date	Chair, Graduate Curriculum Committee	Date
Robert J. Kominski	4/12/12	Doris R. Helms	6/12/12
Chair, College Curriculum Committee	Date	Provost	Date
Leah Whitesell	4/12/12		6/12/12
College Dean	Date	President	Date
Director, Calhoun Honors College	Date		

CLEMSON UNIVERSITY **Curriculum and Course Change System - Print Change/Delete Course Form**

000005

X **Change a Course - Abbrev & Number: HORT- 456**
Corresponding Lab Course: --
Corresponding Honors course: --
.. **Add Honors course:** --
Corresponding Graduate course: HORT- -656
.. **Add Graduate course:** --
Course Title: VEGETABLE CROPS

Brief Statement of Change:
Add lab section to the course. The change will provide an experiential learning component that was previously lacking in the lecture-only course. Holding the lab sessions at the Student Organic Farm, a model small scale, diversified working farm, will give students an opportunity to gain hands-on experience with the fundamentals of organic vegetable production and with specific practices covered in the lecture section. The Horticulture Faculty are in strong support of this change.

Last Term taught: 0708	.. **Change Abbrev to:**
Effective Term: 05/2012	.. **Change Number to:**
X **Change Catalog Title:**	X **Change Transcript Title:**
from: Vegetable Crops	from: VEGETABLE CROPS
to: Organic Vegetable Production	to: ORGANIC VEG CROPS

X **Change of Credit**	From: Fixed Credit: 3 (3,0) Variable Credit: - (-), (-)	To: Fixed Credit: 3 (1,6) Variable Credit: - (-),(-)

.. **Add cross-listing with the following child course(s):**
.. **Delete cross-listing with the following child course(s):**
.. **Reverse Parent/Child relationship with:**

X **Change Method of Instruction**		.. **Change Course Modifier**		.. **Change General Education Designation**	
from:	to:	from:	to:	from:	to:
X A-Lecture Only	..	.. Pass/Fail Only	..	.. English Composition	..
.. B-Lab (w/fee)	..	X Graded	..	.. Oral Communication	..
.. D-Seminar	..	.. Variable Title	..	.. Mathematics	..
.. E-Independent Study	..	.. Creative Inquiry	..	.. Natural Science w/Lab	..
.. F-Tutorial (w/fee)	..	.. Repeatable	..	.. Math or Science	..
.. G-Studio	..	maximum credits		.. A&H (Literature)	..
.. H-Field course	..	from:		.. A&H (Non-Literature)	..
.. I-Study Abroad	..	to:		.. Social Science	..
.. L-Lab (no/fee)	..			.. CCA	..
.. N/B-Lecture/Lab(w/fee)	X			.. STS	..
.. N/L-Lecture/Lab(no fee)	..				

X **Change Catalog Description:**
from: Principles and practices employed in commercial growing and marketing of vegetable crops with emphasis on plant characteristics, cultivars, management practices, harvest, quality factors and grading, storage, economic importance, and areas of production.
to: Principles and practices of organic vegetable production including site and variety selection, field and greenhouse production methods, and cultural practices to manage pests and weeds. Harvesting and post-harvest handling will also be addressed. Emphasis will be placed on sustainable practices, alternative methods, and reducing reliance on chemical inputs.

.. **Change Prerequisite(s):**
from:
to:

Learning Objectives: By the end of this course, the student will be able to:
- Describe the fundamentals of organic vegetable production under the National Organic Program
- Describe critical factors in organic farm planning
- Describe irrigation system design and implementation
- Describe and contrast practices to enhance soil quality and fertility
- List and describe the efficacy of key organic pest management practices
- Describe production and market characteristics of vegetable varieties appropriate for organic production
- Demonstrate the proper techniques for plant propagation, management techniques and harvest
- Demonstrate the proper techniques for composting and mulching, crop rotation and tillage
- Work independently and in groups to effectively grow, harvest and market organic vegetables.

Topical Outline: Lecture Topical Outline (15 contact hours)
Concepts of sustainable and organic vegetable production (1.5)
National Organic Program standards (0.5)
Harvesting and post harvest handling (1.5)
Organic pest management (2)
Plant propagation techniques (1)
Soil quality and fertility (3)
Irrigation system design (1)
Season extension (1.5)
Value added production (1)
Organic vegetable variety selection (2)

Lab Topical Outline (90 contact hours)
Harvesting techniques (9)

000005

Post harvest handling (6)
Organic weed management (3)
Organic disease management (3)
Organic insect management (3)
Attracting beneficial insects (3)
Plant propagation techniques (6)
Soil texture and structure, soil amendments (6)
Soil sampling techniques, interpreting test results (3)
Composting and mulching (3)
Crop rotation, cover crops, green manures (6)
Tillage and no-till practices (3)
Irrigation system design (3)
Irrigation system implementation (3)
Season extension techniques; greenhouse (6)
Season extension techniques; high tunnels (3)
Canning and drying vegetables and fruit (3)
Freezing and fermentation (3)
Variety characteristics; greens and cole crops (3)
Variety characteristics; beans, squash, tomatoes, corn, pepper (3)
Variety characteristics; melons, sweet potatoes, cucumbers, turnips, beets (3)
Tour of local organic farms (6)

Evaluation: Undergraduate grading:
Exam 1 90 points
Exam 2 90 points
Exam 3 90 points
Assessment of student's ability to practically apply knowledge in the field 70 points
Lab journal presentation 40 points
Written report on Upstate Farm Tour 20 points
Total 400 points

Duplication (if applicable): Not applicable--this course is already being taught.

Add course requirements for honors and/or 600-level courses (if applicable): Graduate grading:
Exam 1 80 points
Exam 2 80 points
Exam 3 80 points
Lab journal presentation 30 points
Written report on Upstate Farm Tour 30 points
Assigned research project 100 points
Total 400 points

Form Originator: ZEHNDER, Geoffrey Zehnder **Date Form Created:** 2/16/2012
Form Last Updated by: , Date Form Last Updated: 4/12/2012
Form Number: 4882

Approval

Chair, Department Curriculum Committee	Date 4-12-2012	Chair, Undergraduate Curriculum Committee	Date 5/4/2012
Department Chair	Date 4/12/12	Chair, Graduate Curriculum Committee	Date
Chair, College Curriculum Committee	Date 4/12/12	Provost	Date 6/4/12
College Dean	Date 4/12/12	President	Date 6/4/12
Director, Calhoun Honors College	Date		

CLEMSON UNIVERSITY **Curriculum and Course Change System - Print Change/Delete Course Form**

000093

X **Change a Course - Abbrev & Number: HORT- 472**
Corresponding Lab Course: HORT-L-472
Corresponding Honors course: --
.. **Add Honors course:** --
Corresponding Graduate course: HORT- -672
.. **Add Graduate course:** --
Course Title: GARDENING WITH YOUTH

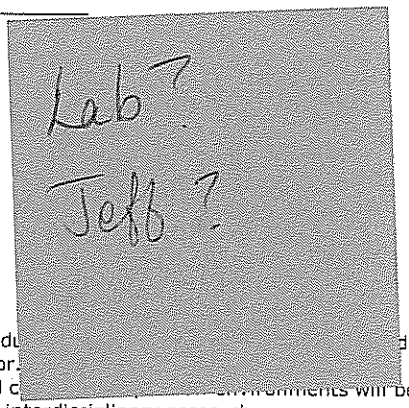
Brief Statement of Change:
We wish to establish the lecture as a separate course from the laboratory and modify the course title. This is necessary to expand the theoretical (lecture) aspects of restorative landscapes which is an emerging interdisciplinary field. Depth and breadth is being added to the subject matter by focusing on broad groups of people, rather than just elementary school children. This course has not been taught since 2007 and the needs of the field are more interdisciplinary and urban oriented than in previous years. Changes reflect these contemporary trends. Horticulture students (majors and minors) have requested additional classes relating horticulture to health and wellness.

Last Term taught: 0701	.. **Change Abbrev to:**
Effective Term: 05/2012	.. **Change Number to:**
X **Change Catalog Title:**	X **Change Transcript Title:**
from: Gardening with youth	from: GARDENING WITH YOUTH
to: Landscapes + Health	to: Landscapes + Health

X **Change of Credit**	From: Fixed Credit: 2 (1,3)	To: Fixed Credit: 3 (3,0)
	Variable Credit: 1-6 (-), (-)	Variable Credit: - (-),(-)

.. **Add cross-listing with the following child course(s):**
.. **Delete cross-listing with the following child course(s):**
.. **Reverse Parent/Child relationship with:**

X **Change Method of Instruction**		.. **Change Course Modifier**		.. **Change General Education Designation**	
from:	to:	from:	to:	from:	to:
.. A-Lecture Only	X	.. Pass/Fail Only	..	.. English Composition	..
.. B-Lab (w/fee)	..	X Graded	..	.. Oral Communication	..
.. D-Seminar	..	.. Variable Title	..	.. Mathematics	..
.. E-Independent Study	..	.. Creative Inquiry	..	.. Natural Science w/Lab	..
.. F-Tutorial (w/fee)	..	.. Repeatable	..	.. Math or Science	..
.. G-Studio	..	maximum credits		.. A&H (Literature)	..
.. H-Field course	..	from:		.. A&H (Non-Literature)	..
.. I-Study Abroad	..	to:		.. Social Science	..
.. L-Lab (no/fee)	..			.. CCA	..
X N/B-Lecture/Lab(w/fee)	..			.. STS	..
.. N/L-Lecture/Lab(no fee)	..				



X **Change Catalog Description:**
from: Exploration of the role of gardening and related outdoor experiences in enhancement of edu... pro-social behavior in elementary school children. Preq: Senior standing and consent of instructor.
to: Explore of the role of landscapes in human health and wellness. Historical healing places and c... environments will be examined for evidence of psychological and physiological impacts. Readings include foundational interdisciplinary research.

.. **Change Prerequisite(s):**
from:
to:

Learning Objectives: Students completing this course will understand the psychological, physiological, and environmental interactions between people and the natural and built landscape. Students will have gained knowledge of the foundational literature pertaining to nature and health. Finally, students will have learned how to interpret the health impacts of various landscapes on specific populations.

Topical Outline: Topical Outline Part 1: Historical Context (12 lecture hrs total)
A. World health (2 lecture hr)
B. Mythology and symbolism (1 lecture hr)
C. Historical healing places (6 lecture hrs)
Oral presentations (2 lecture hrs)
Exam 1 (1 lecture hr)
Part 2: Research Theory & Methodology (15 lecture hrs total)
A. Landscape preference theory and cultural preference (6 hrs)
B. Data collection techniques (6 hrs)
Oral presentations (2 lecture hrs)
Exam 2 (1 lecture hr)

Part 3: Restorative landscapes (18 lecture hrs total)
A. Effects of views (1 lecture hr)
B. Effects of aromas and textures (1 lecture hr)
C. Wayfinding (1 lecture hr)
D. Hospitals and surgery patients (3 lecture hrs)
E. Gardens (9 lecture hrs)
Oral presentations (2 lecture hrs)
Exam 3 (1 lecture hr)

Final Exam (cumulative)

Evaluation: Evaluation: Undergrad/Grad
4 Exams 70% 60%
Oral presentations 15% 10%
Topical essays 15% 10%
Lit. review/discussion 0 20%
Total 100% 100%

000097

Grading for undergraduates will use the following scale: A = 90%-100%, B = 80-89%, C = 70-79%, D = 60-69%, and F = <60%

Grading for graduate students will use the following scale: A = 90-100%, B = 80-89%, C = 70-79%, F = < 70%.

Add course requirements for honors and/or 600-level courses (if applicable): Graduate students will attend supplementary class meetings to review, discuss, and critique current advances in landscapes and health interdisciplinary research. They will participate in a discussion on the literature surveyed. The grade for literature review will be based on participation during the discussions (40%) and on written critiques summarizing key points of the articles (60%). The literature review and discussions will comprise 20% of the graduate student's grade.

Form Originator: ELLENAV, Ellen Vincent **Date Form Created:** 2/27/2012
Form Last Updated by: LGERING, Lawrence Gering **Date Form Last Updated:** 4/12/2012
Form Number: 4928

Approval

Chair, Department Curriculum Committee	Date 4-12-2012	Chair, Undergraduate Curriculum Committee	Date 5/4/2012
Department Chair	Date 4/12/12	Chair, Graduate Curriculum Committee	Date
Chair, College Curriculum Committee	Date 4/12/12	Provost	Date 6/11/12
College Dean	Date 4/12/12	President	Date 6/11/12
Director, Calhoun Honors College	Date		

CLEMSON UNIVERSITY **Curriculum and Course Change System - Print Major Form**

000003

Change Major Name: Sscs (Soil/Water Environmental Sci)
Degree: BS
Effective Catalog Year: 2013
..**Change Major Name to:**
..**Change Degree to:** (CHE approval required)
X**Change Curriculum Requirements**
(Submit or upload Curriculum map in catalog format. CHE approval required for > 18 hours of changes)
..**Change General Education Requirements**
(Must also submit a General Education Checklist)
..**Add, Change or Delete Concentration(s)**
(Submit or upload Curriculum map in catalog format. CHE approval required)
X**Add, Change or Delete Emphasis Area(s)**
Explanation: We propose to eliminate the Emphasis Areas. We decided on a single list of concentration options in order to allow more flexibility to the students.
The existing Emphasis Area Requirements listed in the curriculum in the second semester of the Sophomore Year and the first and second semesters of the Junior and Senior Year will be changed to read "Concentration Requirements".
The general description of the major and footnotes were modified accordingly as indicated in the curriculum map uploaded here.
Form Originator: PAGUDEL, Paula Agudelo **Date Form Created:** 3/15/2012
Form Last Updated by: , Date Form Last Updated: 4/12/2012
Form Number: 4962

Approval

	4-12-2012		5/4/2012
Chair, Department Curriculum Committee	Date	Chair, Undergraduate Curriculum Committee	Date
	4/12/12		6/11/12
Department Chair	Date	~~Chair, Graduate Curriculum Committee~~ Provost	Date
	4/12/12		6/11/12
Chair, College Curriculum Committee	Date	~~Provost~~ President	Date
	4/12/12		
College Dean	Date	~~President~~ Chair, Graduate Curriculum Committee	Date

SOILS AND SUSTAINABLE CROP SYSTEMS

Bachelor of Science

The BS degree program in Soils and Sustainable Crop Systems is a multidisciplinary program that educates students with expertise in soils, crop sciences, and applied agricultural biotechnology. It offers students a rigorous, science-based degree with educational opportunities related to management of agricultural commodities and natural resources, as well as soil and water resources. Students can tailor the program to fit their professional and academic goals by selecting one of three concentrations ~~with emphasis areas~~.

The Agricultural Biotechnology Concentration integrates conventional disciplines with molecular advances in plants, pathogens, and biosystem interactions and responds to the educational void between the rapid adoption of biotechnology products into agricultural production and the intermediate- and end-users, farmers, and consumers. Graduates in this concentration will be competitive as scientists in emerging agricultural biotechnology industries, as educators, and as policy makers and officers in regulatory agencies.

Students with a concentration in Soil and Water Environmental Science can address compelling problems such as land application of agricultural and industrial wastes, reduction of contamination of ground and surface waters, establishment of functional septic drain fields, and production of food and fiber crops. Graduates will be able to establish careers in traditional agrarian fields such as soil scientists and conservationists, extension agents, and farm consultants, and in the broader environmental arenas of DHEC, consulting engineering firms, and environmental consulting. Graduates will be well prepared for graduate work in fields ranging from soil science to environmental engineering and law.

Students with a concentration in Sustainable Crop Production will graduate with comprehensive knowledge to increase farm profits by decreasing the costs of crop and production; build soil tilth and fertility through rotations, multiple cropping, and nutrient cycling; protect the environment by minimizing or more efficiently using synthetic agrichemicals; manage crop pests and weeds with integrated, ecologically sound strategies; develop strategies for profitable marketing of agricultural commodities; and create a strong, diversified agriculture that is stable through market and weather fluctuations. Graduates can assume positions as self-employed farmers, farm managers, state and federal natural resource managers, research technicians, agricultural industry employees, greenhouse managers, consultants in pest management and sustainable agriculture, field ecology professionals, agritourism industry specialists, extension personnel, or regulatory officers.

SOIL AND WATER ENVIRONMENTAL SCIENCE CONCENTRATION

Freshman Year

First Semester

5 - BIOL 110 Principles of Biology I[1]
4 - CH 101 General Chemistry
3 - MTHSC 102 Intro. to Math. Analysis[2] *or*
4 - MTHSC 106 Calculus of One Variable I[2]
1 - SSCS 101 Survey of Soils and Sustainable Crop Systems
3 - Arts and Humanities (Non-Lit.) Requirement[3]
16-17

Second Semester

5 - BIOL 111 Principles of Biology II[1]
4 - CH 102 General Chemistry
3 - ENGL 103 Accelerated Composition
3 - EX ST 301 Introductory Statistics *or*
4 - MTHSC 108 Calculus of One Variable II *or*
4 - MTHSC 207 Multivariable Calculus
1 - SSCS 102 Academic and Professional Dev. I
16-17

[1] BIOL 110 and 111 are strongly recommended; however, BIOL 103/105 may substitute for BIOL 110, and BIOL 104/106 may substitute for BIOL 111.
[2] MTHSC 106 is recommended for students in the Agricultural Biotechnology Concentration.
[3] See General Education Requirements. PHIL 103 is recommended for students in the Agricultural Biotechnology Concentration.

Sophomore Year

First Semester

3 - CH 223 Organic Chemistry *and*
1 - CH 227 Organic Chemistry Lab. *or*
4 - CH 201 Survey of Organic Chemistry
4 - CSENV 202 Soils
3 - GEOL 101 Physical Geology
1 - GEOL 103 Physical Geology Lab.
3 - PHYS 207 General Physics I *and*
1 - PHYS 209 General Physics I Lab. *or*
3 - PHYS 122 Physics with Calculus I *and*
1 - PHYS 124 Physics Lab. I
16

Second Semester

3 - PHYS 208 General Physics II *and*
1 - PHYS 210 General Physics II Lab. *or*
3 - PHYS 221 Physics with Calculus II *and*
1 - PHYS 223 Physics Lab. II
3 - Arts and Humanities (Literature) Requirement[1]
3 - Cross-Cultural Awareness Requirement[1]
4 - ~~Emphasis~~ Concentration ~~Area~~ Requirement[2]
14

Junior Year

First Semester

3 - COMM 150 Intro. to Human Comm. *or*
3 - COMM 250 Public Speaking
4 - MICRO 305 General Microbiology
5 - ~~Emphasis~~ Concentration ~~Area~~ Requirement[2]
3 - Plant Science Requirement[3]
15

Second Semester

3 - CSENV 490 Beneficial Soil Organisms in Plant Growth
3 - ENGL 314 Technical Writing *or*
3 - ENGL 315 Scientific Writing and Comm.
3 - GEOL 408 Geohydrology
1 - SSCS 401 Academic and Professional Dev. II
3 - ~~Emphasis~~ Concentration ~~Area~~ Requirement[2]
3 - Social Science Requirement[1]
16

Senior Year

First Semester

3 - CSENV (SSCS) 350 Practicum
2 - CSENV 403 Soil Genesis and Classification
1 - CSENV 455 Seminar
3 - Applied Spatial Technology Requirement[4]
3 - ~~Emphasis~~ Concentration ~~Area~~ Requirement[2]
3 - Field Scale Environmental Mgt. Requirement[5]
15

Second Semester

3 - AGRIC (EN SP) 315 Environment and Agric.
3 - BIOSC 401 Plant Physiology *and*
1 - BIOSC 402 Plant Physiology Lab.
3 - CSENV (B E) 408 Land Treatment of Wastewater and Sludges
3 - ~~Emphasis~~ Concentration ~~Area~~ Requirement[2]
3 - Social Science Requirement[1]
16

124–126 Total Semester Hours

[1] See General Education Requirements. [2] Selected from department-approved list. ~~Emphasis areas include Soil and Water Quality, Soil Management, and Soil Science.~~ [3] BIOSC 441, CSENV 421, 422, 423, (AP EC) 426, or HORT 456. [4] AG M 410, FOR 433, or other course approved by advisor. [5] AG M 402, ENTOX 421, or other course approved by advisor.

CLEMSON UNIVERSITY

000020

Curriculum and Course Change System - Print Major Form

Change Major Name: Sscs (Agricultural Biotechnology)
Degree: BS
Effective Catalog Year: 2013
..Change Major Name to:
..Change Degree to: (CHE approval required)
X**Change Curriculum Requirements**
(Submit or upload Curriculum map in catalog format. CHE approval required for > 18 hours of changes)
..Change General Education Requirements
(Must also submit a General Education Checklist)
..Add, Change or Delete Concentration(s)
(Submit or upload Curriculum map in catalog format. CHE approval required)
X**Add, Change or Delete Emphasis Area(s)**
Explanation: We propose to eliminate the Emphasis Areas. We decided on a single list of concentration options in order to allow more flexibility to the students.
The existing Emphasis Area Requirements listed in the curriculum in the second semester of the Junior Year and the first and second semesters of the Senior Year will be changed to read "Concentration Requirements".
The general description of the major and footnotes were modified accordingly as indicated in the curriculm map uploaded here.
Form Originator: PAGUDEL, Paula Agudelo **Date Form Created:** 3/15/2012
Form Last Updated by: , Date Form Last Updated: 4/12/2012
Form Number: 4961

Approval

	4-12-2012		5/4/2012
Chair, Department Curriculum Committee	Date	Chair, Undergraduate Curriculum Committee	Date
	4/12/12		6/14/12
Department Chair	Date	~~Chair, Graduate Curriculum Committee~~ Provost	Date
	4/12/12		6/14/12
Chair, College Curriculum Committee	Date	~~Provost~~ President	Date
	4/12/12		
College Dean	Date	~~President~~ Chair, Graduate Curriculum Committee	Date

SOILS AND SUSTAINABLE CROP SYSTEMS

Bachelor of Science

The BS degree program in Soils and Sustainable Crop Systems is a multidisciplinary program that educates students with expertise in soils, crop sciences, and applied agricultural biotechnology. It offers students a rigorous, science-based degree with educational opportunities related to management of agricultural commodities and natural resources, as well as soil and water resources. Students can tailor the program to fit their professional and academic goals by selecting one of three concentrations ~~with emphasis areas~~.

The Agricultural Biotechnology Concentration integrates conventional disciplines with molecular advances in plants, pathogens, and biosystem interactions and responds to the educational void between the rapid adoption of biotechnology products into agricultural production and the intermediate- and end-users, farmers, and consumers. Graduates in this concentration will be competitive as scientists in emerging agricultural biotechnology industries, as educators, and as policy makers and officers in regulatory agencies.

Students with a concentration in Soil and Water Environmental Science can address compelling problems such as land application of agricultural and industrial wastes, reduction of contamination of ground and surface waters, establishment of functional septic drain fields, and production of food and fiber crops. Graduates will be able to establish careers in traditional agrarian fields such as soil scientists and conservationists, extension agents, and farm consultants, and in the broader environmental arenas of DHEC, consulting engineering firms, and environmental consulting. Graduates will be well prepared for graduate work in fields ranging from soil science to environmental engineering and law.

Students with a concentration in Sustainable Crop Production will graduate with comprehensive knowledge to increase farm profits by decreasing the costs of crop and production; build soil tilth and fertility through rotations, multiple cropping, and nutrient cycling; protect the environment by minimizing or more efficiently using synthetic agrichemicals; manage crop pests and weeds with integrated, ecologically sound strategies; develop strategies for profitable marketing of agricultural commodities; and create a strong, diversified agriculture that is stable through market and weather fluctuations. Graduates can assume positions as self-employed farmers, farm managers, state and federal natural resource managers, research technicians, agricultural industry employees, greenhouse managers, consultants in pest management and sustainable agriculture, field ecology professionals, agritourism industry specialists, extension personnel, or regulatory officers.

AGRICULTURAL BIOTECHNOLOGY CONCENTRATION

Freshman Year

First Semester

5 - BIOL 110 Principles of Biology I[1]
4 - CH 101 General Chemistry
3 - MTHSC 102 Intro. to Math. Analysis[2] *or*
4 - MTHSC 106 Calculus of One Variable I[2]
1 - SSCS 101 Survey of Soils and Sustainable Crop Systems
3 - Arts and Humanities (Non-Lit.) Requirement[3]
16-17

Second Semester

5 - BIOL 111 Principles of Biology II[1]
4 - CH 102 General Chemistry
3 - ENGL 103 Accelerated Composition
3 - EX ST 301 Introductory Statistics *or*
4 - MTHSC 108 Calculus of One Variable II *or*
4 - MTHSC 207 Multivariable Calculus
1 - SSCS 102 Academic and Professional Dev. I
16-17

[1] BIOL 110 and 111 are strongly recommended; however, BIOL 103/105 may substitute for BIOL 110, and BIOL 104/106 may substitute for BIOL 111.

[2] MTHSC 106 is recommended for students in the Agricultural Biotechnology Concentration.

[3] See General Education Requirements. PHIL 103 is recommended for students in the Agricultural Biotechnology Concentration.

Sophomore Year

First Semester

3 - CH 223 Organic Chemistry
1 - CH 227 Organic Chemistry Lab.
3 - COMM 150 Intro. to Human Comm. *or*
3 - COMM 250 Public Speaking
3 - ECON 200 Economic Concepts *or*
3 - ECON 211 Principles of Microeconomics
3 - SSCS 333 Agricultural Genetics
3 - Arts and Humanities (Literature) Requirement
16

Second Semester

3 - AP EC 205 Agriculture and Society
3 - BIOSC 335 Evolutionary Biology
3 - CH 224 Organic Chemistry
1 - CH 228 Organic Chemistry Lab.
3 - GEN 300 Fundamental Genetics
1 - GEN 301 Fundamental Genetics Lab.
14

Junior Year

First Semester

3 - BIOCH 305 Essential Elements of Biochem.
3 - BIOSC 304 Biology of Plants
2 - BIOSC 434 Biological Chem. Lab. Tech
3 - CSENV 422 Major World Crops
3 - SSCS 335 Agricultural Biotechnology
3 - Social Science Requirement

Second Semester

1 - CSENV (SSCS) 350 Practicum
3 - ENGL 314 Technical Writing *or*
3 - ENGL 315 Scientific Writing and Comm.
3 - PL PA 310 Plant Diseases and People
3 - PL PH (BIOSC) 340 Plant Med. and Magic
1 - SSCS 401 Academic and Professional Dev. II
4 - ~~Emphasis~~ Concentration ~~Area~~ Requirement
15

Senior Year

First Semester

3 - BIOSC 401 Plant Physiology
1 - BIOSC 402 Plant Physiology Lab.
3 - CSENV (SSCS) 350 Practicum
4 -ENT (BIOSC) 301 Insect Biology and Diversity
1 - SSCS 445 Regulatory Issues and Policies
1 - SSCS 450 Agric. Biosystems and Risk Assess.
3 - ~~Emphasis~~Concentration ~~Area~~ Requirement
16

Second Semester

2 - CSENV (SSCS) 350 Practicum
3 - CSENV 409 Biology of Invasive Plants
1 - SSCS 451 Agric. Biotech. and Global Society
9 - ~~Emphasis~~Concentration ~~Area~~ Requirement
15
125–127 Total Semester Hours

~~[1] ECON 200 is recommended for students in the Agricultural Biosystems and Technology Emphasis Area. ECON 211 is recommended for students in the Agricultural Biotechnology and Global Society Emphasis Area.~~

[1] See General Education Requirements.

[2] Select from a department approved list. Courses to support proficiency in a foreign language also are encouraged.

CLEMSON UNIVERSITY **Curriculum and Course Change System - Print Major Form**

000012

Change Major Name: Sscs (Sustainable Crop Production)
Degree: BS
Effective Catalog Year: 2013
..**Change Major Name to:**
..**Change Degree to:** (CHE approval required)
X**Change Curriculum Requirements**
(Submit or upload Curriculum map in catalog format. CHE approval required for > 18 hours of changes)
..**Change General Education Requirements**
(Must also submit a General Education Checklist)
..**Add, Change or Delete Concentration(s)**
(Submit or upload Curriculum map in catalog format. CHE approval required)
X**Add, Change or Delete Emphasis Area(s)**
Explanation: We propose to eliminate the Emphasis Areas. We decided on a single list of concentration options in order to allow more flexibility to the students.
The existing Emphasis Area Requirements listed in the curriculum in the first semester of the Junior Year and the first and second semesters of the Senior Year will be changed to read "Concentration Requirements".
The general description of the major and footnotes were modified accordingly as indicated in the curriculm map uploaded here.

We propose to change PLPA411 Plant Disease Diagnosis I from the second semester of the Junior Year to the Summer of the Sophomore Year. This course is only offered in the summer and this is where it should have originally been in the curriculum map.

We propose to add BIOCH 305 Essential Elements of Biochemistry to pair with BIOSC434 Biological Chemistry Lab. Techniques as an altenative to CH224/228 Organic Chemistry and Lab for the second semester of the Sophomore Year.
Form Originator: PAGUDEL, Paula Agudelo **Date Form Created:** 3/15/2012
Form Last Updated by: , Date Form Last Updated: 4/12/2012
Form Number: 4963

Approval

Chair, Department Curriculum Committee	Date	Chair, Undergraduate Curriculum Committee	Date
Department Chair	Date	Chair, Graduate Curriculum Committee	Date
Chair, College Curriculum Committee	Date	Provost	Date
College Dean	Date	President	Date

SOILS AND SUSTAINABLE CROP SYSTEMS

Bachelor of Science

The BS degree program in Soils and Sustainable Crop Systems is a multidisciplinary program that educates students with expertise in soils, crop sciences, and applied agricultural biotechnology. It offers students a rigorous, science-based degree with educational opportunities related to management of agricultural commodities and natural resources, as well as soil and water resources. Students can tailor the program to fit their professional and academic goals by selecting one of three concentrations ~~with emphasis areas~~.

The Agricultural Biotechnology Concentration integrates conventional disciplines with molecular advances in plants, pathogens, and biosystem interactions and responds to the educational void between the rapid adoption of biotechnology products into agricultural production and the intermediate- and end-users, farmers, and consumers. Graduates in this concentration will be competitive as scientists in emerging agricultural biotechnology industries, as educators, and as policy makers and officers in regulatory agencies.

Students with a concentration in Soil and Water Environmental Science can address compelling problems such as land application of agricultural and industrial wastes, reduction of contamination of ground and surface waters, establishment of functional septic drain fields, and production of food and fiber crops. Graduates will be able to establish careers in traditional agrarian fields such as soil scientists and conservationists, extension agents, and farm consultants, and in the broader environmental arenas of DHEC, consulting engineering firms, and environmental consulting. Graduates will be well prepared for graduate work in fields ranging from soil science to environmental engineering and law.

Students with a concentration in Sustainable Crop Production will graduate with comprehensive knowledge to increase farm profits by decreasing the costs of crop and production; build soil tilth and fertility through rotations, multiple cropping, and nutrient cycling; protect the environment by minimizing or more efficiently using synthetic agrichemicals; manage crop pests and weeds with integrated, ecologically sound strategies; develop strategies for profitable marketing of agricultural commodities; and create a strong, diversified agriculture that is stable through market and weather fluctuations. Graduates can assume positions as self-employed farmers, farm managers, state and federal natural resource managers, research technicians, agricultural industry employees, greenhouse managers, consultants in pest management and sustainable agriculture, field ecology professionals, agritourism industry specialists, extension personnel, or regulatory officers.

SUSTAINABLE CROP PRODUCTION CONCENTRATION

Freshman Year

First Semester

5 - BIOL 110 Principles of Biology I[1]
4 - CH 101 General Chemistry
3 - MTHSC 102 Intro. to Math. Analysis[2] *or*
4 - MTHSC 106 Calculus of One Variable I[2]
1 - SSCS 101 Survey of Soils and Sustainable Crop Systems
3 - Arts and Humanities (Non-Lit.) Requirement[3]
16-17

Second Semester

5 - BIOL 111 Principles of Biology II[1]
4 - CH 102 General Chemistry
3 - ENGL 103 Accelerated Composition
3 - EX ST 301 Introductory Statistics *or*
4 - MTHSC 108 Calculus of One Variable II *or*
4 - MTHSC 207 Multivariable Calculus
1 - SSCS 102 Academic and Professional Dev. I
16-17

[1] BIOL 110 and 111 are strongly recommended; however, BIOL 103/105 may substitute for BIOL 110, and BIOL 104/106 may substitute for BIOL 111.
[2] MTHSC 106 is recommended for students in the Agricultural Biotechnology Concentration.
[3] See General Education Requirements. PHIL 103 is recommended for students in the Agricultural Biotechnology Concentration.

Sophomore Year

First Semester

3 - AP EC 202 Agricultural Economics *or*
3 - ECON 211 Principles of Microeconomics
3 - CH 223 Organic Chemistry *and*
1 - CH 227 Organic Chemistry Lab. *or*
4 - CH 201 Survey of Organic Chemistry
4 - CSENV 202 Soils
3 - PL PA 310 Plant Diseases and People
14

Second Semester

3 - AP EC 205 Agriculture and Society
3 - CH 224 Organic Chemistry *and*
1 - CH 228 Organic Chemistry Lab.[1] *or*
3 - BIOCH 305 Essential Elem. of Biochem. *and*
2 - BIOSC 434 Biological Chemistry Lab. Techniq.
3 - COMM 150 Intro. to Human Comm. *or*
3 - COMM 250 Public Speaking
3 - SSCS 333 Agricultural Genetics
3 - Plant Science Requirement[2]
16

Summer

2 - PL PA 411 Plant Disease Diagnosis I

Junior Year

First Semester

4 -ENT (BIOSC) 301 Insect Biology and Diversity
3 - IPM 401 Principles of Integrated Pest Mgt.
3 - ~~Emphasis~~ Concentration Area Requirement[3]
3 - Plant Science Requirement[2]
3 - Social Science Requirement[4]
16

Second Semester

3 - BIOSC 401 Plant Physiology
1 - BIOSC 402 Plant Physiology Lab.
3 - CSENV 405 Plant Breeding
3 - CSENV 409 Biology of Invasive Plants
3 - ENGL 314 Technical Writing *or*
3 - ENGL 315 Scientific Writing and Comm.
~~2 - PL PA 411 Plant Disease Diagnosis I~~
1 - SSCS 401 Academic and Professional Dev. II
14~~6~~

Senior Year

First Semester

3 - CSENV 490 Beneficial Soil Organisms in Plant Growth
4 - ENT 407 Applied Agricultural Entomology
6 - ~~Emphasis~~Concentration ~~Area~~ Requirement[3]
13

Second Semester

3 - CSENV (SSCS) 350 Practicum
3 - CSENV 452 Soil Fertility and Management
1 - CSENV 453 Soil Fertility Lab.
1 - CSENV 455 Seminar
3 - Arts and Humanities (Literature) Requirement[4]
6 - ~~Emphasis~~Concentration ~~Area~~ Requirement[3]
17

124–126 Total Semester Hours

[1] CH 223/227, and 224/228 are strongly recommended; ~~however BIOSC 344 and three elective hours may be substituted.~~ [2] BIOSC 304, CSENV 422, 423, HORT 310, 455, 456, or other course approved by advisor. [3] Select from department-approved list. ~~Emphasis areas include Crop Production and Integrated Pest Management.~~
[4] See General Education Requirements.

CLEMSON UNIVERSITY

000014

Curriculum and Course Change System - Print Major Form

Change Major Name: Wildlife and Fisheries Biology (BS)
Degree: BS
Effective Catalog Year: 2013
.. **Change Major Name to:**
.. **Change Degree to:** (CHE approval required)
X **Change Curriculum Requirements**
(Submit or upload Curriculum map in catalog format. CHE approval required for > 18 hours of changes)
.. **Change General Education Requirements**
(Must also submit a General Education Checklist)
.. **Add, Change or Delete Concentration(s)**
(Submit or upload Curriculum map in catalog format. CHE approval required)
.. **Add, Change or Delete Emphasis Area(s)**

Explanation: Courses currently offered as approved requirements in the WFB major include a list of WFB, FOR, BIOSC, FNR, ENR and other listings. To increase potential course offerings and minimize the necessity of submitting course substitution forms, we propose that the Approved Requirements be expanded to allow the inclusion of any 300 or 400 level courses in WFB, FOR, FNR, ENR and BIOSC as suitable for an approved requirement.

Form Originator: LANHAMJ, Joseph Lanham **Date Form Created:** 3/27/2012
Form Last Updated by: , **Date Form Last Updated:** 4/11/2012
Form Number: 4965

Approval

	4-11-2012		5/4/2012
Chair, Department Curriculum Committee	Date	Chair, Undergraduate Curriculum Committee	Date
	4/11/12		
Department Chair	Date	Chair, Graduate Curriculum Committee	Date
	4/12/12		6/11/12
Chair, College Curriculum Committee	Date	Provost	Date
	4/12/12		6/11/12
College Dean	Date	President	Date

PROPOSED Wildlife and Fisheries Biology

Freshman Year

First Semester			Second Semester		
BIOL 103	General Biology I	3	BIOL 104	General Biology II	3
BIOL 105	General Biology Lab. I	1	BIOL 106	General Biology Lab. II	1
CH 101	General Chemistry	4	CH 106 **OR** PHYS 200	Chemistry in Context II[1] Introductory Physics	4 4
ENR 101	Intro to Environment & Natural Resources	1			
MTHSC 102	Intro. to Mathematical Analysis	3	ENGL 103	Accelerated Composition	3
Oral Communication Requirement[2]		3	EX ST 301	Introductory Statistics	3
			FNR 102	FNR Freshman Portfolio	1
Semester Hours: 15			Semester Hours: 15		

Sophomore Year

First Semester			Second Semester		
FNR 204	Soil Information Systems	4	GEN 300	Fundamental Genetics	3
FOR 205	Dendrology	2	ENGL 314	Technical Writing	3
FOR 221	Forest Biology	3	FOR 206	Forest Ecology	3
WFB 300	Wildlife Biology	3	WFB 350	Principles of Fish & Wildlife Biology	3
WFB 301	Wildlife Biology Laboratory	1	Social Science Requirement[1]		3
Arts and Humanities (Non-Lit.) Requirement[1]		3			
Semester Hours: 16			Semester Hours: 15		

Junior Year

First Semester			Second Semester		
BIOSC 320	Field Botany	4	WFB (BIOSC) 313	Conservation Biology	3
Approved Requirement[2]		3	WFB 412	Wildlife Management	3
BIOSC 303	Vertebrate Biology	3	WFB 416	Fishery Biology	3
WFB 410	Wildlife Management Techniques	3	WFB 440	Non-Game Wildlife Management	3
Arts and Humanities (Lit.) Requirement[1]		3	WFB 462	Wetland Wildlife Biology	3
Semester Hours: 16			Semester Hours: 15		

Senior Year

First Semester			Second Semester		
AP EC 257	Natural Resources, Environment & Economics	3	FNR 499	Natural Resources Seminar	1
AVS 301	Anat. & Phys. of Domestic Animals	4	WFB 430	Wildlife Conservation Policy	3
FOR (ENR) 434	GIS for Landscape Planning	3	Approved Requirement[2]		8
WFB 498	Senior Portfolio	1	Policy and Law Requirement[2]		3
Approved Requirement[2]		4			
Semester Hours: 15			Semester Hours: 12		

122 Total Semester Hours

[1] See General Education Requirements. Three of these credit hours must also satisfy the Cross-Cultural Awareness Requirement; three credits must also satisfy the Science and Technology in Society Requirement

(Note: Social Science Requirement must be in an area other than economics or applied economics.)

[2] Select from department-approved list.

Approved Requirements for Wildlife and Fisheries Biology

AGM 301	Soil and Water Conservation	3
CRD 357	Natural Resources Economics	3
ENT 300	Environmental Entomology	3
ENT (WFB) 469, H469, 669	Aquatic Insects	3

Note: Additional Approved Requirements for Wildlife and Fisheries Biology may include any 300 or 400 level courses in WFB, FOR, FNR, ENR, BIOSC that are not required in the degree program.

Students enrolled in the Combined Bachelor of Science / Master of Science Degree Program may take the 600-level version of a 400/600 course if it is offered.

Approved Requirements for Policy and Law (PAL)[1]

APEC 475	Economics of Wildlife Management	3	FOR 400, 600	Public Relations in Natural Resources	3
CRD 357	Natural Resources Economics	3	FOR (ENR) 416	Forest Policy and Administration	3
ENR 429, 469	Environmental Law and Policy	3	WFB 430, 630	Wildlife Conservation Policy	3
ENR 450, 650	Conservation Issues	3			

[1](as long as not used to fill another requirement in curriculum)

CLEMSON UNIVERSITY **Curriculum and Course Change System - Print Major Form** 000015

Change Major Name: Packaging Science
Degree: BS
Effective Catalog Year: 2013
.. **Change Major Name to:**
.. **Change Degree to:** (CHE approval required)
X **Change Curriculum Requirements**
(Submit or upload Curriculum map in catalog format. CHE approval required for > 18 hours of changes)
.. **Change General Education Requirements**
(Must also submit a General Education Checklist)
.. **Add, Change or Delete Concentration(s)**
(Submit or upload Curriculum map in catalog format. CHE approval required)
X **Add, Change or Delete Emphasis Area(s)**
Explanation: 1 - PKGSC 103 removed
2 - COMM 250 moved from second semester Junior Yr. to second semester Freshman Year.
3 - PKGSC 203 removed
4 - PKGSC 220 moved to first semester Sophomore Yr. from second semester Sophomore Yr.
5 - GC 103 moved from second semester Sophomore Yr. to first semester Junior Yr.
6 - Arts and Humanities (Literature) Requirement moved from second semester Junior Yr. to second semester Sophomore Yr.
7 - ENGL 314 added to first semester Junior Yr.
8 - PKGSC 320 moved to second semester Junior Yr. from first semester Junior Yr.
9 - PKGSC 368 moved to second semester Junior Yr. from first semester Junior Yr.
10 - PKGSC 430 moved o second semester Junior Yr. from first semester Junior Yr.
11 - Paragraph 3 of page two, the following wording was removed: Business Administration, Entrepreneurship; Environmental Engineering, Environmental Science and Policy, Management. These are removed because they are no longer approved as emphasis areas.
12 - Note *4 has the following statement added: A 6 month period is preferred. Two 10 week summer periods of 40-hr. weeks with the same company is an option.
13 - The following changes were made to the Emphasis areas: International Packaging and Marketing/Finance were discontinued. The former Engineering Technology and Distribution & Transportation emphasis areas were consolidated into one new emphasis area – Distribution, Transportation and Engineering Technology.

In order to enhance the flexibility of our offerings and make changes that have been requested by students and faculty, we are deleting two courses, inserting two courses, inserting ENGL 314, moving several courses, as well as eliminating and consolidating emphasis areas in response to assessment.

Rationale:

Minors: Any University approved minor will now be accepted. This change responds to students' requests for more flexibility in choosing a minor.

Emphasis areas: International Packaging was discontinued due to lack of demand from students. The Marketing/Finance emphasis area was discontinued; students interested in this area are advised to take the minor in Business Administration per the strong recommendation of the Department's Industry Advisory Board. The Engineering Technology and the Distribution & Transportation emphasis areas were consolidated based on feedback from students and advisors. The consolidated area offers students and advisors more options to fulfill the emphasis area requirements.

PKGSC 103 and PKGSC 203: Beginning Spring 2012, the Packaging Science ePortfolio content of PKGSC 103 has been incorporated in PKGSC 102. Due to time limitations in PKGSC 102, only a very limited portion of the communication skills content of PKGS 103 can be retained as a formal part of PKGSC 102. We will compensate for this by requiring ENGL 314 in our curriculum.

The Total Credit Hours changed from 122 to 124 because PKGSC 220 was changed from 2 to 4 credit hours based on student feedback and exit surveys which indicated that the workload was more equivalent to 4 hours of work with the addition of a laboratory component.

Semester schedule changes: With the previously approved increase of PKGSC 220 from 2 credits to 4 credits and the restoration of 3-credit ENGL 314 to the curriculum, courses were moved among semesters to balance the recommended credit load for each semester resulting in efficient sequencing.

Form Originator: KCOOKSE, Kay Cooksey **Date Form Created:** 10/28/2011
Form Last Updated by: , **Date Form Last Updated:** 3/8/2012
Form Number: 4609

Approval

Margaret N Londrasky	3/8/12		5/4/2012
Chair, Department Curriculum Committee	Date	Chair, Undergraduate Curriculum Committee	Date
	3/8/12		
Department Chair	Date	Chair, Graduate Curriculum Committee	Date
Robert J. Kaminski	3/8/12		6/11/12
Chair, College Curriculum Committee	Date	Provost	Date
	3/8/12		6/11/12
College Dean	Date	President	Date

000017

PACKAGING SCIENCE CURRICULUM
(Proposed) 2013-2014

FRESHMAN YEAR

First Semester		Second Semester	
PKGSC 101 Packaging Orientation*[1]	1	PKGSC 102 Intro to Packaging Science*[1]	2
BIOL103 General Biology I	3	BIOL 104 General Biology II	3
BIOL105 General Biology Lab I	1	BIOL 106 General Biology Lab II	1
CH 101 General Chemistry	4	CH 102 General Chemistry	4
MTHSC 106 Calculus of One Variable I	4	ENGL 103 Accelerated Composition	3
Social Science Requirement*[2]	3	COMM 250 Public Speaking	3
	16		16

SOPHOMORE YEAR

First Semester*[3]		Second Semester*[3]	
PKGSC 202 Packaging Materials & Manuf*[1]	4	PKGSC 201 Packaging Perishable Products	3
PKGSC 220 Product & PKG Design	4	PKGSC 204 Container Systems*[1]	3
CH 201 Survey Organic Chemistry *or*	4	PKGSC 206 Container Systems Lab*[1]	1
CH 223 Organic Chemistry *and*	3	PHYS 208 General Physics II *and*	3
CH 227 Organic Chemistry Lab	1	PHYS 210 General Physics II Lab *or*	1
PHYS 207 General Physics I *and*	3	PHYS 221 Physics w/Calculus II *and*	3
PHYS 209 General Physics I Lab *or*	1	PHYS 223 Physics Lab II	1
PHYS 122 Physics w/Calculus I *and*	3	Arts & Humanities (Literature) Requirement*[2]	3
PHYS 124 Physics Lab II	1		14
	16		

CO-OP 101 Cooperative Education*[4] 0

JUNIOR YEAR

First Semester		Second Semester	
ENGL 314 Technical Writing	3	PKGSC 320 Package Design Fundamentals	3
PKGSC 404 Mechanical Properties of Packages & Principles of Protective Packaging*[5]	3	PKGSC 368 Packaging & Society	3
PKGSC 454 Product and Package Eval Lab*[5]	1	PKGSC 401 Packaging Machinery	3
GC 103 Graphic Comm 1 for Packaging Sci	4	PKGSC 430 Converting for Flexible Packaging	3
Emphasis Area Requirement*[6]	3	PKGSC 440 Packaging for Distribution	3
	14	Emphasis Area Requirement*[6]	3
			18

SENIOR YEAR

First Semester		Second Semester	
PKGSC 416 Appl of Polymers in Packaging	4	PKGSC 403 Packaging Career Preparation	1
PKGSC 464 Food & Health Care Pkg Syst	4	PKGSC 420 Package Design & Development	3
EXST 301 Introductory Statistics	3	APEC 202 Agricultural Economics *or*	3
Emphasis Area Requirement*[6]	3	ECON 211 Principles of Microeconomics	3
	14	Arts & Humanities (Non-Lit) Requirement*[2]	3
		Emphasis Area Requirement*[6]	6
			16

Total Semester Hours – 124

The Bachelor of Science degree in Packaging Science prepares students for careers in industries producing and utilizing packages for all types of products. Packaging is an essential part of industrialized economies, protecting, preserving, and helping to market products. The field of packaging is highly competitive and highly innovative, requiring an ever-increasing number of professional positions.

Opportunities for employment include a wide variety of career paths such as manufacturing, marketing, sales, design, purchasing, quality assurance, and customer services. Most career opportunities are in positions requiring technical knowledge combined with marketing and management skills.

The core curriculum assures graduates of having the skills and knowledge required by most entry-level packaging positions. Emphasis area choices allow students to select courses to improve career preparation for specific industry segments, including: Distribution, Transportation and Engineering Technology; Materials; Food and Health Care Packaging; and Package Design and Graphics. Alternatively, any University-approved minor may be completed.

Students changing majors to Packaging Science must have at least a 2.0 cumulative grade-point ratio.

*[1] A "C" or better is required in this course for graduation.

*[2] See General Education Requirements. Three of these credit hours must also satisfy the Cross-Cultural Awareness Requirement. *Note:* Social Science Requirement must be in an area other than economics or applied economics. A 200-level or higher foreign language course is recommended to satisfy the Arts and Humanities (Non-literature) Requirement

*[3] Students interested in minors or emphasis areas should take any prerequisites in the sophomore year.

*[4] At least one 15-week period of 40 hr. weeks of Cooperative Education is required. A 6-month period is preferred. Two 10-week summer periods of 40-hr. weeks with the same company are an option.

*[5] PKGSC 404 and 454 must be taken concurrently.

*[6] Completion of any emphasis area or university approved minor is required. The approved course list of the four emphasis areas is available in the departmental undergraduate student handbook or the department office. Emphasis areas consist of 15 credit hours selected from one of the following areas (additional emphasis area courses may be approved by emphasis area coordinator):

Distribution, Transportation and Engineering Technology

Materials

Food and Health Care Packaging

Package Design and Graphics

PACKAGING SCIENCE CURRICULUM
(2011-2012)

000019

FRESHMAN YEAR

First Semester		Second Semester	
PKGSC 101 Packaging Orientation*[1]	1	PKGSC 102 Intro to Packaging Science*[1]	2
BIOL103 General Biology I	3	PKGSC 103 Packaging Science E-Portfolio	1
BIOL105 General Biology Lab I	1	BIOL 104 General Biology II	3
CH 101 General Chemistry	4	BIOL 106 General Biology Lab II	1
MTHSC 106 Calculus of One Variable I	4	CH 102 General Chemistry	4
Social Science Requirement*[2]	3	ENGL 103 Accelerated Composition	3
	16		14

SOPHOMORE YEAR

First Semester*[3]		Second Semester*[3]	
PKGSC 202 Packaging Materials & Manuf*[1]	4	PKGSC 201 Packaging Perishable Products	3
PKGSC 203 Packaging Research Fundamentals	2	PKGSC 204 Container Systems*[1]	3
CH 201 Survey Organic Chemistry *or*	4	PKGSC 206 Container Systems Lab*[1]	1
CH 223 Organic Chemistry *and*	3	PKGSC 220 Package Drawing/CAD	2
CH 227 Organic Chemistry Lab	1	PHYS 208 General Physics II *and*	3
PHYS 207 General Physics I *and*	3	PHYS 210 General Physics II Lab *or*	1
PHYS 209 General Physics I Lab *or*	1	PHYS 221 Physics w/Calculus II *and*	3
PHYS 122 Physics w/Calculus I *and*	3	PHYS 223 Physics Lab II	1
PHYS 124 Physics Lab II	1	GC 103 Graphic Comm 1 for Packaging Sci	4
	14		17

Summer

CO-OP 101 Cooperative Education*[4] 0

JUNIOR YEAR

First Semester		Second Semester	
PKGSC 320 Package Design Fundamentals	3	PKGSC 401 Packaging Machinery	3
PKGSC 368 Packaging & Society	3	PKGSC 440 Packaging for Distribution	3
PKGSC 404 Mechanical Properties of Packages & Principles of Protective Packaging*[5]	3	COMM 250 Public Speaking	3
PKGSC 430 Converting for Flexible Packaging	3	Arts & Humanities (Literature) Requirement*[2]	3
PKGSC 454 Product and Package Eval Lab*[5]	1	Emphasis Area Requirement*[6]	3
Emphasis Area Requirement*[6]	3		15
	16		

SENIOR YEAR

First Semester		Second Semester	
PKGSC 416 Appl of Polymers in Packaging	4	PKGSC 403 Packaging Career Preparation	1
PKGSC 464 Food & Health Care Pkg Syst	4	PKGSC 420 Package Design & Development	3
EXST 301 Introductory Statistics	3	APEC 202 Agricultural Economics *or*	3
Emphasis Area Requirement*[6]	3	ECON 211 Principles of Microeconomics	3
	14	Arts & Humanities (Non-Lit) Requirement*[2]	3
		Emphasis Area Requirement*[6]	6
			16

Total Semester Hours – 122

The Bachelor of Science degree in Packaging Science prepares students for careers in industries producing and utilizing packages for all types of products. Packaging is an essential part of industrialized economies, protecting, preserving, and helping to market products. The field of packaging is highly competitive and highly innovative, requiring an ever-increasing number of professional positions.

Opportunities for employment include a wide variety of career paths such as manufacturing, marketing, sales, design, purchasing, quality assurance, and customer services. Most career opportunities are in positions requiring technical knowledge combined with marketing and management skills.

The core curriculum assures graduates of having the skills and knowledge required by most entry-level packaging positions. Emphasis area choices or approved minors allow students to select courses to improve career preparation for specific industry segments, including: Distribution and Transportation; Engineering Technology; Food and Health Care Packaging; Materials; Business Administration; Entrepreneurship; Environmental Engineering, Environmental Science and Policy, Management.

Students changing majors to Packaging Science must have at least a 2.0 cumulative grade-point ratio.

*[1] A "C" or better is required in this course for graduation.

*[2] See General Education Requirements. Three of these credit hours must also satisfy the Cross-Cultural Awareness Requirement. *Note:* Social Science Requirement must be in an area other than economics or applied economics. A 200-level or higher foreign language course is recommended to satisfy the Arts and Humanities (Non-literature) Requirement

*[3] Students interested in minors or emphasis areas should take any prerequisites in the sophomore year.

*[4] At least one 15-week period (6 months preferred) of Cooperative Education is required.

*[5] PKGSC 404 and 454 must be taken concurrently.

*[6] Completion of an approved minor or emphasis is required.

- Approved minors are Business Administration, Entrepreneurship, Environmental Engineering, Environmental Science and Policy Management

- Emphasis areas consist of 15 credit hours selected from one of the following areas (additional emphasis area courses may be approved by emphasis area coordinator):

  Distribution and Transportation – See Advisor for approved emphasis area courses.

  Engineering and Technology – See Advisor for approved emphasis area courses.

  Food and Health Care Packaging – See Advisor for approved emphasis area courses.

  Package Design and Graphics – See Advisor for approved emphasis area courses.

  Materials – See Advisor for approved emphasis area courses.

  International Packaging – See Advisor for approved emphasis area courses.

  Marketing/Finance – See Advisor for approved emphasis area courses.

Rhonda Todd

From: Robert Kosinski [rjksn@clemson.edu]
Sent: Wednesday, May 02, 2012 1:18 PM
To: Rhonda Todd
Cc: Michael Silvestri
Subject: English Approves ENGL 314 for PKGSC

Rhonda and Michael, Marge Condrasky of FNPS says that they've reached an agreement with English for the temporary inclusion of ENGL 314 in the PKGSC curriculum. Here's a memo from Sean Williams that lays out the terms:

From: Sean Williams
Sent: Monday, April 30, 2012 5:57 PM
To: Margaret Condrasky; Brian Mcgrath
Cc: ANTHONY POMETTO III; Kay Cooksey
Subject: Follow up on English 314 for Packaging Sciences

Hello, Everybody.

As promised, I wanted to send a note reporting the contents of our conversation last Friday about Packaging Science including English 314 in its curriculum revisions.

The English Department obviously wants to be flexible and because we understand how complicated curriculum revisions can be, we'll include Packaging Science in the 314 offerings – for the short term. As we discussed, we are slowly but surely decommissioning English 314/304/315 and so adding Packaging Science actually goes /against/ or planned trajectory. We're not going to torpedo your work to date, though, especially because we think it will provide the opportunity for us to move writing back into the major through your 203 course.

All that is to say, I would ask that in exchange for this short term agreement, you agree in your subsequent curriculum revisions to remove English 314 from the requirement by the end of next year. That gives us a little time to work on a replacement strategy and moving the course back into your major as it was before.

Thanks for a great and open conversation and I look forward to working with Packaging Science on moving forward a larger initiative to place these courses in the majors!

Best wishes,
SDW

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