

**MINUTES**  
**Faculty Senate Academic Affairs**  
**November 6, 2007, 3:30 p.m.**  
**K-State Student Union, Room 204**

Present: Carroll, Charney, Chengappa, Holcombe, Hubler, King, Martin, Montelone, Pacey, Staggenborg

Absent: LeHew, Ramaswamy, Weninger

Guests: Kelli Cox, Ernie Minton, Duane Davis, Fred Fairchild

1. Doris Carroll, chair, called the meeting to order at 3:35 p.m. Carroll requested permission from the committee to address items 2 and 4B before beginning at the start of our agenda to accommodate our guests. Committee members had no objections.

2. The October 16, 2007 minutes were approved as submitted.

3. Ad Hoc Course and Curriculum Policy Proposal – Kelli Cox (**Attachment 3**)

Carroll thanked Cox for attending and turned the floor over to her. Cox briefly described what the charge of the committee was, as outlined at the beginning of the document, and explained that the committee tried to the best of their ability to follow through on this charge. She then went on to explain a change regarding undergraduate programs including interdisciplinary programs. The proposal contains an outline for an expedited review of changes that are minor enough that they do not need to go all the way through to Academic Affairs or Faculty Senate. The major change is the introduction of an Undergraduate Coordinator. Committee members briefly discussed what types of things may fall under this person's purview. Having a coordinator would help just in the sense of having consistency in developing programs as well as for other reasons. Committee members gave feedback to Kelli Cox and she will adjust the proposal based on this feedback. The revised proposal will then be sent to the committee for a vote at our next meeting.

4. Course and Curriculum Changes

A. Undergraduate Education

1. A motion was made by Chengappa and seconded by Holcombe to approve the following course and curriculum changes as approved by the College Agriculture of on October 8, 2007:

**COURSE CHANGES**

*Agricultural Communications and Journalism*

Add:

AGCOM 450 Digital Video Storytelling

AGCOM 500 Web 2.0 & The Diffusion of Innovation

*Animal Sciences and Industry*

Changes to:

ASI 395 Advanced Meat Evaluation

Add:

ASI 333 Equine Enterprise Management

*Horticulture, Forestry and Recreation Resources*

Changes to:

HORT 275 ~~Concepts of Horticultural Design I~~

HORT 508 Landscape Maintenance

HORT 510 Horticultural Design II

HORT 515 ~~Turf Management~~ Basic Turfgrass Culture

HORT 517 Golf Course and Sports Turf Operations

HORT 551 ~~Landscape Contracting and Construction~~ The Business of Landscape Contracting

HORT 555 ~~Landscape Irrigation: Design and Contracting~~ The Fundamentals of Landscape Irrigation Design

HORT 582 Foundations of Horticultural Pest Management

Add:

HORT 325 Introduction to Organic Farming  
HORT 360 Public Horticulture  
HORT 516 Intensive Culture of Golf and Sports Turf  
HORT 552 Horticultural Landscape Construction  
HORT 583 Survey of Horticultural Ornamental and Food Crop Pests  
HORT 587 Turfgrass Diseases and Their Management  
HORT 588 Turfgrass Weeds and Their Management  
HORT 589 Turfgrass Insects and Their Management

Drop:

HORT 519 Turfgrass Pest Management

*Plant Pathology*

Changes to:

PLPTH 575 ~~Special~~ Topics in Plant Pathology

Add:

PLPTH 576 Special Topics in Plant Pathology  
PLPTH 583 Survey of Horticultural Ornamental and Food Crop Pests  
PLPTH 587 Turfgrass Diseases and Their Management

**CURRICULUM CHANGES**

**(Attachment 1)**

There was discussion around the Milling Science and Management, Chemistry Option. It was suggested to delete the first sentence in the rationale and this was agreed upon by the Agriculture representative. Also, it was noted that the total graduation hours may be incorrect on the Management, Operations, and Chemistry Options. (Since the meeting, Fairchild has confirmed this and the changes are noted to read 128 hours not 129 hours.) Motion carried.

2. A motion was made by Chengappa and seconded by Staggenborg to approve the following course and curriculum changes as approved by the College of Human Ecology on October 8, 2007:

**COURSE CHANGES**

*School of Family Studies and Human Services*

Changes to:

FSHS 585 Professional Seminar in ~~Family Life Education~~ FSHS

*Department of Hotel, Restaurant, Institution Management and Dietetics*

Changes to:

HRIMD 120 Introduction to Survey of ~~Survey of~~ the Hospitality Industry  
HRIMD 221 Topics in Hospitality  
HRIMD 463 Convention Services and Event Management

Add:

HRIMD 443 Food Writing

**CURRICULUM CHANGES**

*Department of Apparel, Textiles, and Interior Design*

- Changes to the Bachelor of Science in Apparel and Textiles: Add STAT 325 as a course option under General studies courses. (See page 3 of white sheets for rationale)

*Department of Hotel, Restaurant, Institution Management and Dietetics*

- Changes to the Bachelor of Science in Hotel and Restaurant Management: Replace ENGL 516 with ENGL 517 under general requirements. Under Professional Studies, HRIMD 120 has increased one credit hour thus increasing Professional Studies from 37 to 38 credit hours. Under Professional Electives, delete HRIMD 425 and HRIMD 665, and increase the credit hours in HRIMD 463 from 2 to 3 thus changing professional electives from 15 hours to 14 hours. Total credit hours for graduation have not changed. (See pages 5-7 of white sheets for more detail).

Motion carried.

3. A motion was made by King and seconded by Staggenborg to approve the following course and curriculum changes as approved by the College of Technology & Aviation on October 16, 2007:

**COURSE CHANGES**

Changes to:

AVM 315 Advanced Avionics

Add:

PPIL 251 Private Pilot Helicopter Ground School

PPIL 252 Private Pilot Helicopter Flight Lab

PPIL 281 Instrument Helicopter Pilot Ground School

PPIL 282 Instrument Helicopter Pilot Flight Lab

PPIL 291 Commercial Pilot Helicopter Ground School

PPIL 292 Commercial Pilot Helicopter Flight Lab

PPIL 351 Flight Instructor Helicopter Ground School

PPIL 352 Flight Instructor Helicopter Flight Lab

AVM 242 Navigational Aids and Communication Systems for Avionics

COT 020 University Honors Program

COT 189 Introduction to University Honors Program

Drop:

PPIL 310 Aircraft Certification

**CURRICULUM CHANGES**

- Changes to the Associate of Technology in Engineering Technology, Mechanical Engineering Technology Option: Replace CMST 101 with CMST 110. Delete ETA 020. Total hours required for graduation have changed from 67 to 68.
- Changes to the Associate of Technology in Engineering Technology, Electronic and Computer Engineering Technology Option: Replace CMST 101 with CMST 110. Delete ETA 020. Total hours required for graduation have changed from 67 to 68.

Motion carried.

4. A motion was made by Chengappa and seconded by King to approve the following course and curriculum changes as approved by the College of Education on October 23, 2007:

**CURRICULUM CHANGES**

*Department of Secondary Education*

Degree Name Change:  
FROM: Bachelor of Science  
TO: Bachelor of Science in Education

Department of Elementary Education  
Degree Name Change:  
From: Bachelor of Science in ~~Elementary~~ Education  
To: Bachelor of Science in Education

Rationale: The College of Education would like to unify the degree name for both Elementary and Secondary to better describe their program.

Effective Date: Fall 2008

Motion carried.

- B. Graduate Education – A motion was made by Martin and seconded by Chengappa to bring back to the floor for approval the following curriculum change approved by the Graduate Council on October 2, 2007. Motion carried.

### **New Certificate Program**

Interdisciplinary Graduate Certificate in Stem Cell Biotechnology (**Attachment 2**)

Carroll introduced Ernie Minton and Duane Davis, who were present to address the questions regarding the certificate program. Both guests gave a brief overview of the program and how it came into existence. The certificate requires 15 credit hours, 8 of which are required. The rest are elective. Hubler raised a concern about student learning outcome number 5. Her concern is that none of the course descriptions seem to address that specific learning outcome. She wondered what course will be used to address this concern. They plan to use the topics course 902 to meet this desired outcome. Hubler mentioned possibly having a different course created instead of the topics course so that the course description could more accurately reflect the intent of the course. Both Davis and Minton concurred that it could *eventually* be turned in to this. There was also discussion about use of the word “ethics” and possibly using a different word, such as societal issues, or awareness. After all concerns were addressed, a motion was made by Chengappa and seconded by Staggenborg to approve the new graduate certificate in Stem Cell Biotechnology. Motion carried.

### C. General Education

1. The following courses have been approved by the UGE Council for continued UGE status:  
(Informational item only)

ASI 303 History & Attitudes of Animal Use  
ASI 330 Horse as a Window to the World  
ART 100 Two Dimensional Design  
ECON 110 Principles of Macroeconomics  
ECON 536 Comparative Economics  
ENGL 220 Fiction into Film  
ENGL 231 Medieval and Renaissance  
ENGL 234 Modern English  
ENGL 440 Themes in Literature  
FREN 514 Contemporary France  
FREN 520 Introduction to French Literature I  
FSHS 670 Working With Parents  
GEOG 221 Environmental Geography I  
GEOG 500 Geography of the United States

GEOL 102 Earth Through Time  
GEOL 125 Natural Disasters  
MUSIC 100 Music Fundamentals  
MUSIC 245 Introduction to American Music  
PHYS 451 Principles of Contemporary Physics  
POLSC 301 Introduction to Political Thought  
SOCIO 363 Global Problems  
SOCWK 510 Social Welfare as a Social Institution  
SPCH 311 Business and Professional Speaking  
SPCH 526 Persuasion

5. Committee Reports

- A. University Library Committee – Mohan Ramaswamy  
No report.
- B. Committee on Academic Policy and Procedures (CAPP) – Doris Carroll  
Carroll reported that we will have on the agenda for our next meeting both the Final Exam Policy and an updated version of the plagiarism definition.
- C. Student Senate – Tim Weninger  
No report.
- D. Course and Curriculum ad hoc committee (proposal reviewed under item 3)  
This item was discussed at the beginning of the meeting. A second reading will take place at our next meeting.
- E. General Education Task Force – Melody LeHew  
No report.

6. Old Business

- A. Final Exam Policy update (CAPP)  
An updated version will be on our next agenda.
- B. Plagiarism Definition (CAPP) – no new information  
An updated version will be on our next agenda.

7. New Business

Carroll reported that David Delker from the iSIS task force would like to have more faculty input that will reach them in a timely manner. Montelone suggested that persons involved in course and curriculum changes in the colleges might be a good place to look. Carroll will talk more in depth with Delker before bringing this back to the committee.

8. For the good of the University

9. The meeting was adjourned at 4:45 p.m.

**ATTACHMENT 1**

College of Agriculture Curriculum Proposals – October 8, 2007

Animal Sciences and Industry

Business Option

**FROM: BUSINESS & ECONOMICS**

**(Required)**

ACCTG 231 Accounting Business Operations  
ACCTG 241 Accounting Investments & Finance

**Select 6 Courses**

Agricultural Economics - Any course numbered 202 or higher except 490  
Accounting - Any course  
Family Studies - FSHS 105  
Finance - Any course  
Management - Any course  
Marketing - Any course

**TO: BUSINESS & ECONOMICS**

**(Required)**

ACCTG 231 Accounting Business Operations  
ACCTG 241 Accounting Investments & Finance

**Select 6 Courses**

Agricultural Economics - Any course numbered 202 or higher except 490  
Accounting - Any course  
Economics - Any course 500-level and above  
Family Studies - FSHS 105  
Finance - Any course  
Management - Any course  
Marketing - Any course

RATIONALE: 500-level economics courses are worthwhile choices for the "Business and Economics" section.

IMPACT: We do not anticipate a significant impact on the Economics Department.

EFFECTIVE DATE: Fall 2008

Science/Pre-Vet Option

**FROM: Physics/Math/Statistics Requirement**

(Minimum 6 hours)

Select From:

PHYS 113, 114

MATH 205, 210, 211, 220, 221, 222

STAT 325, 340, 350, 351

**TO: Physics/Math/Statistics Requirement**

(Minimum 6 hours)

Select From:

PHYS 113, 114

MATH 100, 205, 210, 211, 220, 221, 222

STAT 325, 340, 350, 351

**RATIONALE:** Science/Pre-Vet Option students who choose to complete the Science/Pre-Vet option, but are not planning on going to Vet School would be allowed to use *MATH 100, College Algebra*, to meet the 6 hours of math requirements of the option. All of our other options require *MATH 100*, but also require only 3 additional hours of Math/Statistics/Computers.

**IMPACT:** No impact on other departments

**EFFECTIVE DATE:** Fall 2008

Bioscience/Biotechnology, Business, Communications, Production/Management, and Science/Pre-Vet Options

**FROM:** Currently we allow students majoring in Animal Sciences and Industry within the Bioscience/Biotechnology, Business, Communications, Production/Management, and Science/Pre-Vet Options to have the option of taking *FDSCI 302, Introduction to Food Science*, as one of their Ag elective courses outside of Animal Science.

**TO:** We are proposing that the same set of students have the option of also taking *FDSCI 305, Fundamentals of Food Processing*, or *FDSCI 690, Principles of HACCP* as one of their Ag elective courses.

**RATIONALE:** Courses in this area are intended to provide breadth to a student's curriculum. We currently allow only *FDSCI 302* to meet this requirement. *FDSCI 305* and *FDSCI 690* would be equally beneficial to our students.

**IMPACT:** We anticipate this will have little impact on the Food Science and Industry program.

**EFFECTIVE DATE:** Fall 2008

Production/Management Option

FROM: **BUSINESS & ECONOMICS**

(Required)

ACCTG 231 Accounting Business Operations  
ACCTG 241 Accounting Investments & Finance  
OR  
AGEC 308 Farm and Ranch Management

**Select 4 Courses**

Agricultural Economics - Any course numbered 202 or higher except 490  
Accounting - Any course  
Family Studies - FSHS 105  
Finance - Any course  
Management - Any course  
Marketing - Any course

**ANIMAL SCIENCE**

(Required)

ASI 105	Animal Science Lab	1
ASI 106	Dairy/Poultry Lab	1
ASI 318	Fundamentals of Nutrition	3
ASI 320	Principles of Feeding	3
ASI 400	Farm Animal Repro	4
ASI 510	Animal Breeding Principles	3
ASI 580	Senior Seminar	1

**Select 1 Course**

ASI 350	Meat Science	3
ASI 361	Meat Animal Processing	2
ASI 601	Phys of Lactation	3

**Select 1 Course**

ASI 315	Livestock & Meat Eval	3
ASI 405	Fund Milk Processing	3
ASI 640	Poultry Product Tech	3
FDSCI 607	Food Microbiology	4

**Select 3 Courses**

ASI 515	Beef Science	3
ASI 521	Horse Science	3
ASI 524	Sheep Science	3
ASI 535	Swine Science	3
ASI 621	Dairy Science	3
ASI 645	Poultry Management	3
ASI 655	Behavior of Domestic Anmls	3

TO: **BUSINESS & ECONOMICS**

(Required)

ACCTG 231 Accounting Business Operations  
ACCTG 241 Accounting Investments & Finance  
OR  
AGEC 308 Farm and Ranch Management

**Select 4 Courses**

Agricultural Economics - Any course numbered 202 or higher except 490  
Accounting - Any course  
Economics - Any course 500-level and above  
Family Studies - FSHS 105



Finance – Any course  
 Management – Any course  
 Marketing – Any course

**ANIMAL SCIENCE**

**(Required)**

ASI 105	Animal Science Lab	1
ASI 106	Dairy/Poultry Lab	1
ASI 318	Fundamentals of Nutrition	3
ASI 320	Principles of Feeding	3
ASI 400	Farm Animal Repro	4
ASI 510	Animal Breeding Principles	3
ASI 580	Senior Seminar	1

**Select 1 Course**

ASI 350	Meat Science	3
ASI 361	Meat Animal Processing	2
ASI 601	Phys of Lactation	3

**Select 1 Course**

ASI 315	Livestock & Meat Eval	3
ASI 405	Fund Milk Processing	3
ASI 640	Poultry Product Tech	3
FDSCI 607	Food Microbiology	4

**Select 3 Courses**

ASI 515	Beef Science	3
ASI 521	Horse Science	3
ASI 524	Sheep Science	3
ASI 535	Swine Science	3
ASI 621	Dairy Science	3
ASI 645	Poultry Management	3

\*Only one of the courses below can be used to fulfill the above requirement\*

<u>ASI 520</u>	<u>Comp/Lab Anml Mngt</u>	<u>3</u>
<u>ASI 655</u>	<u>Behavior of Domestic Anmls</u>	<u>3</u>

**RATIONALE:** Several of our students change options from the Science/Pre-Vet option to the Production/Management option after their first three years. Most of these students have taken ASI 520, Companion and Lab Animal Management. They would like to use it in this option. This change would require these students to take at least two of our production courses. 500-level economics courses are worthwhile choices for the “Business and Economics” section

**IMPACT:** We do not anticipate a significant impact on the Economics Department.

**EFFECTIVE DATE:** Fall 2008

Grain Science and Industry

Baking Science and Management - Cereal Chemistry Option

**FROM:**

Required courses:

CHM 210 Chemistry I  
 and  
 4 hrs

**TO:**

Required courses:

CHM 210 Chemistry I  
 and  
 4 hrs

CHM 230 Chemistry II	4 hrs
or	
<del>CHEM 220 Chem Prin I</del>	<del>5 hrs</del>
and	
<del>CHEM 250 Chem Prin II</del>	<del>5 hrs</del>
<del>GRSC 101 Intro to GRSC</del>	<del>3 hrs</del>
<del>STAT 320 Elem of Statistics</del>	<del>3 hrs</del>
or	
<del>STAT 340 Biometrics I</del>	<del>3 hrs</del>
BIOCH 521 General Biochemistry	3 hrs
or	
<del>BIOCH 265 Biochemistry</del>	<del>5 hrs</del>
FDSCI 501 Food Chemistry	3 hrs
or	
<del>FDSCI 305 Fund Food Processing</del>	<del>3 hrs</del>
<del>ATM 540 Food Engin Tech</del>	<del>3 hrs</del>
<del>ASI 318 Fund of Nutrition</del>	<del>3 hrs</del>
or	
HN 132 Basic Nutrition	3 hrs
or	
<del>HN 400 Human Nutrition</del>	<del>3 hrs</del>
<del>GRSC 630 Mgmt. Apps</del>	<del>3 hrs</del>

Free Electives 8 hrs  
Total hours required 128 hrs

CHM 230 Chemistry II	4 hrs
<u>GRSC 150 Prin. of Milling</u>	<u>3 hrs</u>
<u>STAT 325 Statistics</u>	<u>3 hrs</u>
BIOCH 521 General Biochemistry	3 hrs
and	
<u>BIOCH 522 General Biochem Lab</u>	<u>2 hrs</u>
FDSCI 501 Food Chemistry	3 hrs
<u>GRSC 540 Eng. Apps in Food</u>	<u>3 hrs</u>
<u>GRSC 541 Eng. Apps in Food Lab</u>	<u>1 hrs</u>
HN 132 Basic Nutrition	3 hrs

Add new category:  
Specialization Electives (select 4 hours)  
GRSC 610 Elec./Grain Proc 3 hrs  
GRSC 500 Milling Science I 4 hrs  
GRSC 745 Fund. Bioprocessing 3 hrs  
GRSC 720 Extrusion Proc. Fd. & Fd. 4 hrs  
EDLST 212 Intro to Lead concepts 3 hrs  
FDSCI 690 HACCP 2 hrs  
GRSC 712 Vib. Spect. Anal 1 hrs  
GRSC 713 Cont. Chromotographic Anal. 1 hrs

Free Electives 6 hrs  
Total hours required 128 hrs

RATIONALE: The above changes are being made to allow students in the Cereal Chemistry option as much flexibility as possible to prepare for careers in the baking of food industries while still gaining a foundation of the newer technologies prevalent in the industry.

CHM 220/250 are being dropped as an alternates and CHM 210/230 will be used for this option.

GRSC 150 will replace GRSC 101 for this option. GRSC150 is more appropriate for students in this option.

GRSC 630 Management Applications will be dropped to make room for addition hours of specialization electives.

ATM 540 is no longer offered and will be replaced with GRSC540. GRSC 541 will be added.

BIOCH 265 is being dropped as an alternate and BIOCH 521 and BIOCH 522 will be required for this option.

ASI 318 and HN 132 are being dropped as alternates and HN400 will be required for this option.

For Cereal Chemistry majors the suggested and Specialization electives are more clearly defined and their scope has been broadened to introduce students to additional, most current topics in the Grain industry.

IMPACT: No major impact outside of department.

EFFECTIVE DATE: Fall 2008

### Baking Science and Management - Production Management Option

FROM:

Required courses:

MATH 220 An Geom Calculus I	4 hrs
BIOCH 265 Int. Organic and Biol Chem	5 hrs
<del>CHM 350 and BIOCH 521</del>	<del>5 hrs</del>
<del>ME 212 Engr Graphics</del>	<del>2 hrs</del>
PHYS 113 Eng Phys I	4 hrs
and	
PHYS 114 Eng Phys II	4 hrs
or	
<del>PHYS 213 Eng Phys I</del>	<del>4 hrs</del>
and	
<del>PHYS 214 Eng Phys II</del>	<del>4 hrs</del>
<del>ASI 318 Fund of Nutrition</del>	<del>3 hrs</del>
or	
HN 132 Basic Nutrition	3 hrs
or	
<del>HN 400 Human Nutrition</del>	<del>3 hrs</del>
<del>STAT 320 Elem of Statistics</del>	<del>3 hrs</del>
or	
<del>STAT 340 Biometrics I</del>	<del>3 hrs</del>

TO:

Required courses:

<u>MATH 205 Gen. Calc and Lin. Alg.</u>	<u>3 hrs</u>
BIOCH 265 Int. Organic and Biol Chem	or
<u>GRSC 110 Flow Sheets</u>	<u>2 hrs</u>
<u>GRSC 150 Principle of Milling</u>	<u>3 hrs</u>
PHYS 113 Eng Phys I	4 hrs
and	
PHYS 114 Eng Phys II	4 hrs
HN 132 Basic Nutrition	3 hrs
<u>STAT 325 Statistics</u>	<u>3 hrs</u>

FDSCI 501 Food Chemistry	3 hrs
or	
<del>FDSCI 305 Fund Food Processing</del>	<del>3 hrs</del>
<del>ATM 540 Food Engin Tech</del>	<del>3 hrs</del>

FDSCI 501 Food Chemistry	3 hrs
<u>GRSC 540 Eng. Apps in Food</u>	<u>3 hrs</u>
<u>GRSC 541 Eng. Apps in Food Lab</u>	<u>1 hrs</u>

Select 9 hours from the following:

ACCTG 241 Acctg Investment Finance	3 hrs
ACCTG 331 Acctg Processes and Controls	3 hrs
<del>ECON 530 Money and Banking</del>	<del>3 hrs</del>

Business Electives (select 9 hours)

ACCTG 241 Acctg Investment Finance	3 hrs
ACCTG 331 Acctg Processes and Controls	3 hrs
<u>AGEC 500 Production Economics</u>	<u>3 hrs</u>
<u>AGEC 515 Food &amp; Agri. Bus. Mktg.</u>	<u>3 hrs</u>
FINAN 450 Principles of Finance	3 hrs

FINAN 450 Principles of Finance	3 hrs
<del>FINAN 470 Fin Analysis and Valuation</del>	<del>3 hrs</del>

IMSE 501 Industrial Managment	3 hrs
MANGT 300 Intro to TQM	3 hrs
MANGT 530 Industrial & Labor Relations	3 hrs

IMSE 501 Industrial Managment	3 hrs
MANGT 300 Intro to TQM	3 hrs
MANGT 530 Industrial & Labor Relations	3 hrs
<del>MANGT 531 Pers. &amp; Human Res. Mgmt.</del>	<del>3 hrs</del>

or

<del>ECON 523 Human Resource Economics</del>	<del>3 hrs</del>
MKTG 400 Marketing	3 hrs
MKTG 542 Prof Selling and Sales Mangt	3 hrs

MKTG 400 Marketing	3 hrs
MKTG 542 Prof Selling and Sales Mangt	3 hrs

Add new category:

Specialization Electives (select 3 hours)

<u>GRSC 610 Elec./Grain Proc</u>	<u>3 hrs</u>
<u>GRSC 500 Milling Science I</u>	<u>4 hrs</u>
<u>GRSC 745 Fund. Bioprocessing</u>	<u>3 hrs</u>
<u>GRSC 720 Extrusion Proc. Fd. &amp; Fd.</u>	<u>4 hrs</u>
<u>EDLST 212 Intro to Lead concepts</u>	<u>3 hrs</u>
<u>FDSCI 690 HACCP</u>	<u>2 hrs</u>
<u>GRSC 712 Vib. Spect. Anal</u>	<u>1 hrs</u>
<u>GRSC 713 Cont. Chromotographic Anal.</u>	<u>1 hrs</u>

Free Electives	9 hrs
Total hours required	128 hrs

Free Electives	<u>8 hrs</u>
Total hours required	128 hrs

RATIONALE: The above changes are being made to allow students as much flexibility as possible while still integrating courses covering the newest technologies in the food industry. Total number of hours required for graduation has not changed; however 3 hours of specialization electives have been added and total hours of free electives has been reduced from 25 to 17.

GRSC 150, Principles of Milling will provide production managers and baking professionals a more through understanding of the flour and the milling process.

CHM 350 and BIOCH 521 are being dropped as an alternates and BIOCH 265 will be required for this option.

ME 212 will be replaced with GRSC 110, Flow Sheets. GRSC 110 will be more applicable for later GRSC senior level courses and for use in the bakery production layout and design areas.

MATH 210 and alternate MATH 220 will be replaced with MATH 205 General Calculus and Linear Algebra. MATH 205 uses an algebra approach more appropriate for students in this option.

ATM 540 is no longer offered and will be replaced with GRSC540. GRSC 541 will be added.

EDLST 212 Introduction to Leadership Concepts will be added as a Specialization elective choice in response to our industry's repeated requests that BSM students would benefit from additional leadership education.

For all BSM majors the suggested Specialization Electives are more clearly defined and their scope has been broadened to introduce students to additional, most current topics in the Grain industry.

IMPACT: Letters have been written to the departments of Mechanical Engineering and Mathematics advising them of the courses being dropped and added.

EFFECTIVE DATE: Fall 2008

Feed Science and Management

FROM:		TO:	
Required courses:		Required courses:	
<del>AGEC 220 Grain Livestock Mktg Systems</del>	<del>3 hrs</del>		
<del>CIS 101-104 (or equivalent PC Course)</del>	<del>3 hrs</del>		
<del>MATH 100 College Algebra</del>	<del>3 hrs</del>		
<del>MATH 150 Trigonometry</del>	<del>3 hrs</del>		
MATH 205 Gen. Calc and Lin. Alg.	3 hrs	MATH 205 Gen. Calc and Lin. Alg.	3 hrs
Specialization Electives	8 hrs	Specialization Electives	<u>18 hrs</u>
		<u>Add to list: GRSC 745 Fund Bioprocessing</u>	<u>3 hrs</u>
Total hours required	126 hrs	Total hours required	<u>124 hrs</u>

RATIONALE: The above changes are being made to allow students as much flexibility as possible in the program to prepare for careers in the feed and allied industries, but also having the background for careers in plant management and operations in the biofuels and related industries. Students will still be able to complete the Pre-Vet Professional Requirements to apply for veterinary medicine if they desire.

Many of the students entering the program have already completed enough math to begin with MATH 205 which is a higher level course that remains in the degree program. Additionally, most students come into the program with the necessary computer skills and do not need a PC course.

Currently all students in the program are required to take both AGEC 220 and AGEC 420 which have some similar areas of content. Only one of these classes is needed for the Feed Science students.

The new GRSC 745 course will allow our students the opportunity to add knowledge and skills beneficial to understanding the production of biofuels and their related co-products.

IMPACT: Letters have been written to the affected departments outside of Grain Science advising them of the courses being dropped and added.

EFFECTIVE DATE: Fall 2008

## Milling Science and Management - Management Option

FROM:

Required courses:

MATH 220 Anal. Geom. & Calc. I ————— 4 hrs  
BIOCH 265 Intro to Organic Biochemistry ——— 5 hrs

SPCH 311 Bus & Prof. Speaking ————— 3 hrs

Select 9 hours from the following:

ACCTG 331 Acttg Proc. & Cont. 4 hrs  
AGEC 513 Ag Finance 3 hrs  
AGEC 515 Food & Agri. Bus. Mktg. 3 hrs  
AGEC 632 Agri. Bus. Logistics 3 hrs  
~~GENAG 390 Ag Employment~~ ————— 1 hrs  
ENGL 516 Writ. Comm. For the Sciences 3 hrs  
MANGT 390 Bus. Law I 3 hrs  
MANGT 420 Mgmt. Conc. 3 hrs  
MANGT 530 Ind. Labor Relations 3 hrs  
MANGT 531 Pers. & Human Res. Mgmt. 3 hrs  
~~MANGT 630 Labor Relations Law~~ ————— 3 hrs

Free Electives 6 hrs  
Total hours required 129 hrs

TO:

Required courses:

MATH 205 Gen. Calc. and Lin. Alg. 3 hrs  
CHM 350 Gen. Organic Chemistry 3 hrs  
CHM 351 Gen. Organic Chemistry Lab 2 hrs  
GRSC 731 Milling Science II Lab 2 hrs  
GRSC 610 Elec/Grain Proc. Ind. 3 hrs

Specialization Electives (select 11 hours)

ACCTG 331 Acttg Proc. & Cont. 4 hrs  
AGEC 513 Ag Finance 3 hrs  
AGEC 515 Food & Agri. Bus. Mktg. 3 hrs  
AGEC 632 Agri. Bus. Logistics 3 hrs  
ENGL 516 Writ. Comm. For the Sciences 3 hrs  
MANGT 390 Bus. Law I 3 hrs  
MANGT 420 Mgmt. Conc. 3 hrs  
MANGT 530 Ind. Labor Relations 3 hrs  
MANGT 531 Pers. & Human Res. Mgmt. 3 hrs  
SPCH 311 Bus & Prof. Speaking 3 hrs  
GRSC 720 Extrusion Proc. in the Fd & Fd. 4 hrs  
GRSC 745 Fund. of Bioprocessing 3 hrs  
GRSC 712 Vibrational Spect. Analysis 1 hrs  
GRSC 713 Cont. Chromotographic Anal. 1 hrs

Free Electives 3 hrs  
Total hours required 128 hrs

RATIONALE: MATH 220, will be replaced with MATH 205, General Calculus and Linear Algebra. MATH 205 has an algebra approach more appropriate for students in this option.

Replace BIOCH 265 with CHM 350 and CHM 351. This will upgrade the level of organic chemistry to better prepare students for chemistry related functions in the milling process.

GRSC 731 Milling Science II Lab (2) will be required for all milling science graduates. It will allow students to apply principles taught in GRSC 730 to increase technical understanding and meet expectations of industry.

Require all milling science graduates take GRSC 610 Elec/Grain Proc. Ind. Understanding of electrical principles and management is important in both options to safely manage and direct an electrically powered operation system.

Create new common specialization electives category for all options, including the previous elective choices for the management option plus selected grain science courses. With addition of GRSC 720 Extrusion and GRSC 745 Fundamentals of Bioprocessing, these changes strengthen the MSM degree program.

IMPACT: Letters have been written to the affected departments outside of Grain Science advising them of the courses being dropped and added.

EFFECTIVE DATE: Fall 2008

Milling Science and Management - Operations Option

FROM:

Required courses:

~~CE 231 Statics A~~ 3 hrs

~~ENVD 205 Graphics I~~ 2 hrs

~~ATM 540 Food Engin Tech~~ 3 hrs

~~BIOCH 265 Intro to Organic Biochemistry~~ 5 hrs

TO:

Required courses:

GRSC 540 Eng. Apps in Food 3 hrs

GRSC 541 Eng. Apps in Food Lab 1 hrs

CHM 350 Gen. Organic Chemistry 3 hrs

CHM 351 Gen. Organic Chemistry Lab 2 hrs

GRSC 625 Flour and Dough Testing 3 hrs

Add new category:

Specialization Electives (select 7 hours)

ACCTG 331 Acttg Proc. & Cont. 4 hrs

AGEC 513 Ag Finance 3 hrs

AGEC 515 Food & Agri. Bus. Mktg. 3 hrs

AGEC 632 Agri. Bus. Logistics 3 hrs

ENGL 516 Writ. Comm. For the Sciences 3 hrs

MANGT 390 Bus. Law I 3 hrs

MANGT 420 Mgmt. Conc. 3 hrs

MANGT 530 Ind. Labor Relations 3 hrs

MANGT 531 Pers. & Human Res. Mgmt. 3 hrs

SPCH 311 Bus & Prof. Speaking 3 hrs

GRSC 720 Extrusion Proc. in the Fd & Fd. 4 hrs

GRSC 745 Fund. of Bioprocessing 3 hrs

GRSC 712 Vibrational Spect. Analysis 1 hrs

GRSC 713 Cont. Chromotographic Anal 1 hrs

Free Electives 9 hrs

Total hours required 129 hrs

Free Electives 3 hrs

Total hours required 128 hrs

RATIONALE: CNS 231 Statics A and ENVD 205 Graphics I are no longer considered as essential in the skill set for the operations students in the milling science program.

ATM 540 is no longer offered and will be replaced with GRSC540. GRSC 541 will be added.

Replace BIOCH 265 with CHM 350 and CHM 351. This will upgrade the level of organic chemistry to better prepare students for chemistry related functions in the milling process.

Create new common specialization electives category for all options, including the previous elective choices for the management option plus selected grain science courses. With addition of GRSC 720 Extrusion and GRSC 745 Fundamentals of Bioprocessing, these changes strengthen the MSM degree program.

IMPACT: Letters have been written to the affected departments outside of Grain Science advising them of the courses being dropped and added.

EFFECTIVE DATE: Fall 2008

Milling Science and Management - Chemistry Option

FROM:

Required courses:

~~CHM 371 Chemical Analysis~~ ————— 4 hrs

~~CHM 551 Organic Chem II Lab~~ ————— 2 hrs

TO:

Required courses:

CHM 350 Gen. Organic Chemistry 3 hrs

CHM 351 Gen. Organic Chemistry Lab 2 hrs

GRSC 610 Elec/Grain Proc. Ind. 3 hrs

GRSC 630 Mgmt. App. Gr. Proc. Ind. 3 hrs

GRSC 730 Milling Science II 2 hrs

GRSC 731 Milling Science II Lab 2 hrs

Add new category:

Specialization Electives (select 3 hours)

ACCTG 331 Acttg Proc. & Cont. 4 hrs

AGEC 513 Ag Finance 3 hrs

AGEC 515 Food & Agri. Bus. Mktg. 3 hrs

AGEC 632 Agri. Bus. Logistics 3 hrs

ENGL 516 Writ. Comm. For the Sciences 3 hrs

MANGT 390 Bus. Law I 3 hrs

MANGT 420 Mgmt. Conc. 3 hrs

MANGT 530 Ind. Labor Relations 3 hrs

MANGT 531 Pers. & Human Res. Mgmt. 3 hrs

SPCH 311 Bus & Prof. Speaking 3 hrs

GRSC 720 Extrusion Proc. in the Fd & Fd. 4 hrs

GRSC 745 Fund. of Bioprocessing 3 hrs

GRSC 712 Vibrational Spect. Analysis 1 hrs

GRSC 713 Cont. Chromotographic Anal 1 hrs

Free Electives 13-14 hrs

Total hours required 129 hrs

Free Electives 3 hrs

Total hours required 128 hrs

RATIONALE:

Chemistry requirements are changed to be consistent with the other two options in the major. All students will now take CHM 350 and 351 as part of the core requirements.

Create new common specialization electives category for all options, including the previous elective choices for the management option plus selected grain science courses. With addition of GRSC 720 Extrusion and GRSC 745 Fundamentals of Bioprocessing, these changes strengthen the MSM degree program.

IMPACT:

Letters have been written to the affected departments outside of Grain Science advising them of the courses being dropped and added.

EFFECTIVE DATE: Fall 2008



Horticulture, Forestry and Recreation Resources

FROM: Horticulture Major with Options in:  
Fruit/Vegetable Production  
~~Greenhouse Management~~  
~~Nursery Management~~  
Landscape Design  
~~Landscape and Turf Management~~  
Horticultural Therapy  
Golf Course Management  
Horticulture Science

TO: Horticulture Major with Options in:  
Fruit/Vegetable Production  
Greenhouse and Nursery Management  
Landscape Design  
Landscape Management  
Horticultural Therapy  
Golf Course Management  
Horticultural Science  
Sports Turf Management  
Public Horticulture

RATIONALE: Option name changes more accurately reflect the curriculum. Combining the nursery management and greenhouse management options recognizes the considerable overlap that currently exists and recognizes the fact we can serve our students better within the context of one specialization. Renaming the landscape and turf management option reflects associated changes in the curriculum which will increase focus on landscaping, and the development of the new option in sports turf management with greater focus on turf management. Two new options in sports turf management and public horticulture reflect both changing demands of the horticultural industry for graduates and changing interests of students. Additional more specific rationale statements follow the detailed curriculum changes outlined on the following pages.

IMPACT: All impacted units have been contacted.

EFFECTIVE DATE: Fall 2008.

**CURRENT****Horticulture Major**

**Specializations in fruit/vegetable production, greenhouse management, nursery management, landscape design, and landscape and turf management**

**Quantitative sciences .....16-18**

CHM 210 Chemistry 1 4  
 Organic chemistry elective 3 5

MATH 100 College Algebra 3  
 Math/physics/comp science elective 3  
 Statistics elective

**Horticulture requirement.....14-18**

HORT 350 Plant Propagation 3  
 HORT 520 Fruit Production 3

**Or**

HORT 560 Vegetable Crop Production 3  
 HORT 190 Pre-Internship in Horticulture 1  
 HORT 590 Horticulture Internship 2 or 5  
 Pest Management elective 2 3

Environmental science elective 3

**Fruit/vegetable specialization.....27**

AGRON 330 Weed Science 3  
 ENTOM 612 Insect Pest Diagnosis 2

**Or**

~~ENTOM 620 Insecticides: Properties & Laws 2~~  
 HORT 376 Herbaceous Ornamental Plants 3  
 HORT 560 Vegetable Crop Production 3  
 HORT 570 Greenhouse Operations Mgmt 3  
 HORT 575 ~~Nursery/Garden Cntr. Operations 3~~

**Specialization electives from list below (10 cr)**

AGRON 375 Soil Fertility 3  
 HORT 210 Concepts of Floral Design 3  
 HORT 275 Concepts of Horticulture Design 3  
 HORT 374 Woody Plant Materials I 3  
~~HORT 375 Woody Plant Materials II 3~~  
 HORT 508 Landscape Maintenance 3  
 HORT 515 Turf Management 3

**PROPOSED****Horticulture Major**

**Specializations in fruit/vegetable production, greenhouse and nursery management (combined with new name), landscape design, and landscape management (new name)**

**Quantitative sciences ..... 15**

CHM 110 General Chemistry 3  
CHM 111 General Chemistry Lab 1  
BIOCH 265 Intro to Organic Chem & Biochem 5

MATH 100 College Algebra 3  
Math/physics elective 3  
 Statistics elective

**Horticulture requirement .....12-15**

HORT 350 Plant Propagation 3  
 HORT 520 Fruit Production 3

**Or**

HORT 560 Vegetable Crop Prod 3  
 HORT 190 Pre-Internship in Horticulture 1  
 HORT 590 Horticulture Internship 2 or 5  
HORT 599 The Horticultural Professional 0

Environmental science elective 3

**Fruit/vegetable specialization ..... 28**

AGRON 330 Weed Science 3  
HORT 325 Intro to Organic Farming 2

HORT 376 Herbaceous Ornamental Plants 3  
 HORT 560 Vegetable Crop Prod 3  
 HORT 570 Greenhouse Operations Mgmt 3  
HORT 582 Foundations of Hort Pest Mgt 1  
HORT 583 Survey of Horticultural Ornamental  
HORT 600 Herbaceous Landscape Plant Prod 2

**Specialization electives from list below (10 cr)**

AGRON 375 Soil Fertility 3  
 HORT 210 Concepts of Floral Design 3  
 HORT 275 Horticultural Design I 3  
 HORT 374 Woody Plant Materials I 3  
**OR**  
 HORT 375 Woody Plant Materials II 3  
 HORT 508 Landscape Maintenance 2  
 HORT 515 Basic Turfgrass Culture 2  
HORT 550 Landscape Irrigation Systems 3  
HORT 575 Nursery/Garden Cntr. Operations 3

HORT 585	Arboriculture	3
HORT 706	Turfgrass Science	3
HORT 775	Plant Nutrition Mgmt.	3

Free Electives 4-12

*Greenhouse management specialization* 28-29

HORT 376	Herbaceous Ornamental Plants	3
HORT 377	Plants in the Inter. Environment	3

HORT 570	Greenhouse Operations Mgmt	3
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HORT 575	Nursery/Garden Cntr. Operations	3
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HORT 625	Floral Crops Prod & Handling	4
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Specialization electives: Choose 4 (12-13 crs)

AGRON 330	Weed Science	3
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HORT 210	Concepts of Floral Design	3
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HORT 275	Concepts of Horticulture Design	3
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HORT 374	Woody Plant Materials I	3
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HORT 375	Woody Plant Materials II	3
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HORT 508	Landscape Maintenance	3
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HORT 515	Turf Management	3
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HORT 585	Arboriculture	3
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HORT 775	Plant Nutrition/Nutrient Mgmt	3
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*Nursery management specialization* 27-28

AGRON 330	Weed Science	3
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HORT 374	Woody Plant Materials I	3
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HORT 375	Woody Plant Materials II	3
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HORT 570	Greenhouse Operations Mgmt	3
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HORT 575	Nursery/Garden Cntr. Operations	3
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Specialization electives: Choose 4 (12-13 cr)

HORT 275	Concepts of Horticulture Design	3
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HORT 376	Herbaceous Ornamental Plants	3
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HORT 508	Landscape Maintenance	3
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HORT 515	Turf Management	3
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HORT 550	Landscape Irrigation Systems	3
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HORT 585	Arboriculture	3
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HORT 625	Floral Crops Prod & Handling	4
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HORT 775	Plant Nutrition/Nutrient Mgmt	3
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HORT 585	Arboriculture	3
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HORT 625	Floral Crops Prod & Handling	2
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Free Electives 6-11

***Greenhouse and Nursery Management***

***specialization* ..... 32**

HORT 570	Greenhouse Operations Mgmt	3
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HORT 575	Nursery/Garden Cntr Ops	3
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HORT 582	Foundations of Hort Pest Mgt	1
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HORT 583	Survey of Horticultural Ornamental	
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	and Food Crop Pests	1
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HORT 600	Herbaceous Landscape Plant Prod	2
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HORT 625	Floral Crops Prod and Handling	2
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Specialization electives from list below (9 cr)

HORT 374	Woody Plant Materials I	
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HORT 375	Woody Plant Materials II	
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HORT 376	Herbaceous Ornamental Plants	3
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HORT 377	Plants Interior Environment	3
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Specialization electives from list below (11 cr)

AGRON 330	Weed Science	3
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HORT 210	Concepts Floral Design	3
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HORT 275	Horticultural Design I	3
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HORT 508	Landscape Maintenance	
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HORT 515	Basic Turfgrass Culture	2
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HORT 595	Landscape Irrigation Systems	3
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HORT 585	Arboriculture	3
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Any other Horticulture course

<i>Landscape design specialization.....</i>		<b>31</b>
HORT 275	Concepts of Horticulture Design	4
HORT 374	Woody Plant Materials I	3
HORT 375	Woody Plant Materials II	3
HORT 376	Herbaceous Ornamental Plants	3
HORT 508	Landscape Maintenance	3
HORT 510	Horticulture Design	3
HORT 551	Landscape Contracts & Constr	3
<del>Design elective</del>		<del>3</del>

Specialization electives from list below (6 cr)		
<del>HORT 515</del>	<del>Turf Management</del>	<del>3</del>
HORT 545	Computer Applications in Design	3
HORT 580	Advanced Horticulture Design	3
HORT 585	Arboriculture	3
Free Electives		5-12

<i>Landscape and turf management specialization.....</i>		<b>27</b>
AGRON 375	Soil Fertility	3
<b>Or</b>		
HORT 706	Turfgrass Science	3
HORT 374	Woody Plant Materials I	3
HORT 375	Woody Plant Materials II	3
HORT 376	Herbaceous Ornamental Plants	3
HORT 508	Landscape Maintenance	3
HORT 515	Turf Management	3
HORT 551	Landscape Contracts & Constr	3
HORT 585	Arboriculture	3
<del>Specialization elective</del>		<del>3</del>

<i>Landscape design specialization .....</i>		<b>29</b>
HORT 275	<u>Horticultural Design I</u>	<u>3</u>
HORT 374	Woody Plant Materials I	3
HORT 375	Woody Plant Materials II	3
HORT 376	Herbaceous Ornamental Plants	3
HORT 508	Landscape Maintenance	<u>2</u>
HORT 510	<u>Horticultural Design II</u>	<u>2</u>
HORT 551	<u>The Business of Landscape Contracting</u>	<u>1</u>
HORT 552	<u>Horticultural Landscape Constr</u>	<u>1</u>
HORT 515	<u>Basic Turfgrass Culture</u>	<u>2</u>
HORT 582	<u>Foundations of Hort Pest Mgt</u>	<u>1</u>
<u>Pest management elective from list below (2 cr)</u>		
HORT 583	<u>Survey of Horticultural Ornamental</u>	
	<u>and Food Crop Pests</u>	<u>1</u>
HORT 587	<u>Turfgrass Diseases &amp; Mgt</u>	
HORT 588	<u>Turfgrass Weeds &amp; Mgt</u>	
HORT 589	<u>Turfgrass Insects &amp; Mgt</u>	

Specialization electives from list below (6 cr)		
HORT 545	Computer Applications in Design	3
HORT 550	<u>Landscape Irrigation Systems</u>	<u>3</u>
HORT 555	<u>Fund of Landscape Irrig Design</u>	<u>3</u>
HORT 580	Advanced Horticulture Design	3
HORT 585	Arboriculture	3
HORT 600	<u>Herbaceous Landscape Plant Prod</u>	<u>2</u>
Free Electives		7-14

<i><u>Landscape management specialization.....</u></i>		<b>27</b>
AGRON 375	Soil Fertility	3
<b>Or</b>		
HORT 706	Turfgrass Science	3
HORT 374	Woody Plant Materials I	3
HORT 375	Woody Plant Materials II	3
HORT 376	Herbaceous Ornamental Plants	3
HORT 508	Landscape Maintenance	<u>2</u>
HORT 515	<u>Basic Turfgrass Culture</u>	<u>2</u>
HORT 550	<u>Landscape Irrigation Systems</u>	<u>3</u>
HORT 551	<u>The Business of Landscape Contr</u>	<u>1</u>
HORT 552	<u>Horticultural Landscape Constr</u>	<u>1</u>
HORT 582	<u>Foundations of Hort Pest Mgt</u>	<u>1</u>
HORT 585	Arboriculture	3

Pest management elective from list below (2 cr)

Free Electives	4-12
<b>Horticultural Therapy specialization</b>	
<b>Math/chemical science .....</b>	<b>10</b>
<del>CHM 210</del> <del>Chemistry</del>	<del>4</del>
MATH 100	College Algebra 3
STAT 320	Elements of Statistics 3
<b>Or</b>	
<del>STAT 330</del>	<del>Elementary Statistics for Social Sciences 3</del>

<b>Horticulture requirement.....23</b>	
HORT 190	Pre-Internship in Horticulture 1
HORT 201	Principles of Horticulture Science 4
HORT 350	Plant Propagation 3
HORT 520	Fruit Production 3
<b>Or</b>	
HORT 560	Vegetable Crop Production 3

<b>Horticulture requirement.....23</b>	
HORT 190	Pre-Internship in Horticulture 1
HORT 201	Principles of Horticulture Science 4
HORT 350	Plant Propagation 3
HORT 520	Fruit Production 3
<b>Or</b>	
HORT 560	Vegetable Crop Production 3

Horticulture electives 12

<b>Horticultural Therapy specialization.....28</b>	
<del>HORT 235</del>	<del>Intro to the Horticultural Therapy Profession 3</del>
HORT 256	Human Dimensions of Hort. 3
HORT 374	Woody Plant Materials I 3
HORT 376	Herbaceous Ornamental Plants 3
HORT 377	Plants of the Interior Environmnt. 3
HORT 525	Horticulture for Special Pop. 3
HORT 530	Horticultural Therapy Case Mgmt 1
HORT 535	Horticultural Therapy Field Tech 3
HORT 540	Horticultural Therapy Field Exp 3
HORT 570	Greenhouse Operations Mgmt 3

<u>HORT 583</u>	<u>Survey of Horticultural Ornamental</u>	
	<u>and Food Crop Pests</u>	<u>1</u>
<u>HORT 587</u>	<u>Turfgrass Diseases &amp; Mgt</u>	<u>1</u>
<u>HORT 588</u>	<u>Turfgrass Weeds &amp; Mgt</u>	
<u>HORT 589</u>	<u>Turfgrass Insects &amp; Mgt</u>	
Free Electives	7-12	

<b>Horticultural Therapy specialization</b>		
<b>Math/chemical science .....</b>	<b>10</b>	
<u>CHM 110</u>	<u>General Chemistry</u>	<u>3</u>
<u>CHM 111</u>	<u>General Chemistry Lab</u>	<u>1</u>
MATH 100	College Algebra	3
STAT 325	Intro to Statistics	3

<b>Horticulture requirement .....</b>		<b>23</b>
HORT 190	Pre-Internship in Horticulture	1
HORT 201	Principles of Horticulture Science	4
HORT 350	Plant Propagation	3
HORT 520	Fruit Production	3
<b>Or</b>		
HORT 560	Vegetable Crop Production	3
<u>HORT 599</u>	<u>The Horticultural Professional</u>	<u>0</u>
<u>HORT 582</u>	<u>Foundations of Hort Pest Mgt</u>	<u>1</u>
<u>HORT 583</u>	<u>Survey of Horticultural Ornamental</u>	

and Food Crop Pests 1  
Horticulture electives 10

<b>Horticultural Therapy specialization.....</b>		<b>29</b>
HORT 256	Human Dimensions of Hort.	3
HORT 374	Woody Plant Materials I	3
HORT 376	Herbaceous Ornamental Plants	3
HORT 377	Plants of the Interior Environmnt.	3
HORT 525	Horticulture for Special Pop.	3
HORT 530	Horticultural Therapy Case Mgmt	1
HORT 535	Horticultural Therapy Field Tech	3
HORT 540	Horticultural Therapy Field Exp	3
HORT 570	Greenhouse Operations Mgmt	3

<u>HORT 600</u>	<u>Herbaceous Landscape Plant</u>	
<u>Prod 2</u>		
<u>HORT 625</u>	<u>Floral Crops Prod &amp; Handling</u>	<u>2</u>

**Human science and service requirements....13**

<del>PHIL 365</del>	<del>Medical Ethics</del>	<del>3</del>
PSYCH 505	Abnormal Psychology	3
PSYCH 520	Life Span Personality Dev	
<del>SOCIO 520</del>	<del>Methods of Social Research</del>	<del>4</del>

**Professional electives.....12**

ANTH 204	Cultural Anthropology	3
<del>ANTH 510</del>	<del>Kinship &amp; Marriage in Cross</del>	<del></del>
	<del>Cult. Perspective</del>	<del></del>
<del>ANTH 511</del>	<del>Cultural Ecology &amp; Economy</del>	<del>3</del>
<del>ANTH 618</del>	<del>Religion in Culture</del>	<del>3</del>

AMETH 160	Intro Am Ethnic Studies	3
<del>ART 560</del>	<del>Art for Exceptional Individual</del>	<del>3</del>
BIOL 330	Public Health Biology	3
<del>BIOL 340</del>	<del>Structure and Function of the</del>	<del></del>
	<del>Human Body</del>	<del>8</del>
EDSP 500	Introduction to Human	
	Exceptionality	3

FSHS 415	Manual Communication	3
FSHS 506	Middle Childhd. & Adolescence	
GERON 315	Introduction to Gerontology	3
HIST 534	Social History of Medicine	3
KIN 220	Biobehavioral Bases of Exercise	
KIN 345	Psychological Dynamics of	
	Physical Activity	

PSYCH 202	Drugs & Behavior	2
PSYCH 280	Psychology of Childhood and	
	Adolescence	3
<del>PSYCH 510</del>	<del>Introduction to Behavior</del>	<del></del>
	<del>Modification</del>	<del>3</del>
<del>PSYCH 520</del>	<del>Life Span Personal</del>	<del></del>
	<del>Development</del>	<del>3</del>
SOCIO 432	Comm Organ & Leadership	3
SOCIO 460	Juvenile Delinquency	3
<del>THTRE 665</del>	<del>Drama Therapy with Special</del>	<del></del>
	<del>Populations</del>	<del>3</del>

**Human science and service requirements ... 12**

<u>SOCIO 360</u>	<u>Social Problems</u>	<u>3</u>
PSYCH 505	Abnormal Psychology	3
PSYCH 520	Life Span Personality Dev	
<u>THTRE 665</u>	<u>Drama Therapy with Special</u>	<u></u>
<u>Pop.</u>	<u>3</u>	<u>3</u>

**Professional electives ..... 12**

ANTH 204	Cultural Anthropology	3
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AMETH 160	Intro Am Ethnic Studies	3
BIOL 330	Public Health Biology	3

EDSP 500	Introduction to Human	
	Exceptionality	3
<u>FSHS 110</u>	<u>Intro Human Development</u>	<u>3</u>
<u>FSHS 310</u>	<u>Early Childhood</u>	<u></u>
<u>FSHS 350</u>	<u>Family Relationships &amp; Gender</u>	<u></u>
	<u>Roles</u>	<u>3</u>

FSHS 415	Manual Communication	3
FSHS 506	Middle Childhood &	
	Adolescence	3
GERON 315	Introduction to Gerontology	3
HIST 534	Social History of Medicine	3
KIN 220	Biobehavioral Bases of Exercise	
KIN 345	Psychological Dynamics of	
	Physical Activity	

<u>MC 180</u>	<u>Fundamentals of Public Relation</u>	<u></u>
<u>PHIL 365</u>	<u>Medical Ethics</u>	<u>3</u>
PSYCH 202	Drugs & Behavior	2
PSYCH 280	Psychology of Childhood and	
	Adolescence	3
<u>PSYCH 470</u>	<u>Psychobiology</u>	<u>3</u>
<u>PSYCH 535</u>	<u>Social Psychology</u>	<u>3</u>
<u>SOCIO 361</u>	<u>Soc. Of Criminal Justice</u>	<u></u>
	<u>Systems</u>	<u>3</u>
SOCIO 432	Comm Organ & Leadership	3
SOCIO 460	Juvenile Delinquency	3

**OR**

~~THRE 674 Drama Therapy with Adolescents 3~~

**OR**

~~THRE 675 Drama Therapy with Older Adults 3~~

**Golf Course Management Specialization**

**Technical core.....20**

~~BIOL 198 Principles of Biology 4~~

~~CHEM 210 Chemistry I 4~~

Computer science elective 3

MATH 100 College Algebra 3

MATH 205 General Calc & Linear Algebra 3

Statistics elective 3

Statistics elective 3

**Internship.....6**

HORT 190 Pre-Internship in Horticulture 1

HORT 590 Horticulture Internship 2

(at a golf facility)

HORT 590 Horticulture Internship 3

(at a golf facility)

**Or**

HRIMD 495/

GENBA 495 Golf Course Internship in

Business/Hospitality

Management 3

**Turf Management.....39**

GENAG 101 Ag Orientation 1

AGRON 305 Soils 4

AGRON 335 Environmental Quality 3

**Or**

FOR 375 Intro to Natural Resources Mgt 3

AGRON 375 Soil Fertility 3

ATM 653 Water Management and

Irrigation

Systems 3

**Or**

HORT 550 Landscape Irrigation Systems 3

HORT 201 Principles of Hort Science 4

HORT 374 Woody Plant Materials I 3

**Or**

HORT 375 Woody Plant Materials II 3

HORT 515 Turf Management 3

**Golf Course Management Specialization**

**Technical core ..... 20**

BIOL 198 Principles of Biology 4

CHEM 110 General Chemistry 3

CHEM 111 General Chemistry Lab 1

Computer science elective 3

MATH 100 College Algebra 3

MATH 205 General Calc & Linear Algebra 3

Statistics elective 3

Statistics elective 3

**Internship ..... 6**

HORT 190 Pre-Internship in Horticulture 1

HORT 590 Horticulture Internship 2

(at a golf facility)

HORT 590 Horticulture Internship 3

(at a golf facility)

**Or**

HRIMD 495/

GENBA 495 Golf Course Internship in

Business/Hospitality

Management 3

HORT 599 The Horticultural Professional

**Turf Management..... 40**

GENAG 101 Ag Orientation 1

AGRON 305 Soils 4

AGRON 335 Environmental Quality 3

**Or**

FOR 375 Intro to Natural Resources Mgt 3

AGRON 375 Soil Fertility 3

ATM 653 Water Management and

Irrigation

Systems 3

**Or**

HORT 550 Landscape Irrigation Systems 3

HORT 201 Principles of Hort Science 4

HORT 374 Woody Plant Materials I 3

**Or**

HORT 375 Woody Plant Materials II 3

HORT 515 Basic Turfgrass Culture 2

HORT 516 Intensive Culture of Golf and

Sports Turf 1

HORT 517	Golf Course Operations	3	HORT 517	<u>Golf Course and Sports Turf Operations</u>	<u>3</u>
HORT 706	Turfgrass Science	3	HORT 706	Turfgrass Science	3
PLPTH 500	Principles of Plant Pathology	3	PLPTH 500	Principles of Plant Pathology	3
			<u>HORT 582</u>	<u>Foundations of Hort Pest Mgt</u>	<u>1</u>
			<u>HORT 587</u>	<u>Turfgrass Diseases &amp; Mgt</u>	<u>1</u>
			<u>HORT 588</u>	<u>Turfgrass Weeds &amp; Mgt</u>	
			<u>HORT 589</u>	<u>Turfgrass Insects &amp; Mgt</u>	
Horticulture elective		3	Horticulture elective		3
<del>Pest management elective</del>		<del>3</del>			
Free electives .....		7-9	Free electives .....		<u>6-8</u>

**RATIONALE:**

**Quantitative sciences:** the change from CHM 210 to CHM 110/111 is due to our recognition that CHM 110/111 offers the knowledge of chemistry necessary for the horticulture major; BIOCHM 265 is required rather than one of two Organic chemistry electives, this change is required since the other elective requires CHM 210; removing computer science elective choices in recognition that the majority of our students come to us with acceptable computer skills

**Horticulture requirement:** the pest management elective has been incorporated into each of the specialization curricula, all hort students will be required to take HORT 582 Foundations of Hort Pest Management and depending on the specialization, also choose 1-3 additional credits from a list of approved courses; the addition of HORT 599 The Horticultural Professional is a new course required of all hort majors, this is a capstone course of a 3-course series (HORT 190, 590, 599) that focuses on the hort industry and serves as a mechanism to collect end-program assessments

**Specializations:** Changes within each specialization reflect changes in existing courses being put forth at this time and the addition of new courses being put forth at this time. Specialization name changes more accurately reflect the curriculum. Combining the nursery management and greenhouse specializations recognizes the considerable overlap and the fact we can serve our students better within the context of one specialization

**IMPACT:** All units who will be impacted by the above changes have been contacted.

**EFFECTIVE DATE:** Fall 2008



**Sports Turf Operations Management (New Option under the Horticulture major)**

**Technical Core ..... 20 hours**

BIOL 198	Principles of Biology	4
CHM 110	General Chemistry	3
CHM 111	General Chemistry Lab	1
Computer Science Elective		3
Math 100	College Algebra	3
Math 205	General Calculus & Linear Algebra	3
Statistics elective		

**Communication and Interpersonal**

**Relations..... 17 hours**

ENGL 100	Expository Writing I	3
ENGL 200	Expository Writing II	3
SPCH 105	Public Speaking 1A	2
Communications Electives		9

**Internship..... 6 hours**

HORT 190	Pre-Internship in Horticulture	1
HORT 590	Horticulture Internship	2
HORT 590	Horticulture Internship	3

**Humanities and Social Sciences ..... 14 hours**

ECON 110	Prin. of Macroeconomics	3
ECON 120	Prin. of Microeconomics	
OR		
AGEC 120	Agric. Econ. And Agric. Bus	3
Humanities and Social Science Elective		3
Foreign Language Elective		3-5

**Business Management ..... 15 hours**

ACCTG 231	Accounting for Business Ops.	3
MANGT 420	Management Concepts	3
MKTG 400	Marketing	3
MANGT 531	Human Resource Management	3
MKTG 630	Sports Marketing	3

**Turf Management..... 47 hours**

GENAG 101	Ag Orientation	1
AGRON 305	Soils	
AGRON 335	Environmental Quality	3
	<b>OR</b>	
FOR 375	Intro. to Natural Resource Management	3
AGRON 375	Soil Fertility	3
ATM 653	Water Mgt. and Irrigation Systems	3
	<b>OR</b>	
HORT 550	Landscape Irrigation Systems	3
HORT 201	Principles of Horticultural Science	4
HORT 374	Woody Plant Materials I	3
	<b>OR</b>	
HORT 376	Herbaceous Ornamental Plants	3
HORT 515	Basic Turfgrass Culture	2
HORT 516	Intensive Culture of Golf and Sports Turf	1
HORT 517	Golf Course and Sports Turf Operations	3
HORT 706	Turfgrass Science	3
PLPTH 500	Principles of Plant Pathology	3
RRES 690	Parks and Recreation Adm.	4
RRES 489	Program and Event Planning	3
Horticulture Elective		3
HORT 582	Foundations of Horticultural Pest Management	1
HORT 587	Turfgrass Diseases and their Management	1
HORT 588	Turfgrass Weeds and their Management	1
HORT 589	Turfgrass Insects and their Management	1
	<b>Hospitality ..... 4 hours</b>	
HRIMD 220	Environmental Issues in Hosp.	2
HRIMD 340	Contemporary Issues in Controlled Beverages	2

**Free Electives ..... 7 hours**

**Total Credit Hours Required for Graduation 1**

**RATIONALE:**

Sports Turf Operations Management is proposed as a new specialization under the Horticulture major in the Department of Horticulture, Forestry and Recreation Resources. There is a growing demand for professionals in this area and we believe the proposed curriculum is unique and will prepare graduates well for careers in this area. The Sports Turf Operations Management option was prepared with input from the Board of Directors of the Sports Turf Managers Association (STMA). This included comments from sports turf managers overseeing sports turf and related operations for major league baseball, the NFL, and K-12 school districts (see following pages). The national sports turf sales manager for the Toro Corporation is an adjunct faculty in our department, and will be involved in student instruction for 1 to 2 weeks every year.

Modeled after our Golf Course Management program, the Sports Turf Operations Management option places an emphasis on horticulture and turfgrass science, and complements this with course work in communications, business, and hospitality. The STMA members repeatedly emphasized the importance of business and communications and supported the inclusion of some hospitality courses. The importance of work experience prior to graduation is again emphasized with 6 credits of internship required.

In summary, we believe the proposed Sports Turf Operations Management option will be unique in the U.S., much as our current Golf Course Management program is, and will produce graduates well prepared for the challenges of this growing industry.

**IMPACT:**

All impacted units have been contacted.

**EFFECTIVE DATE:**

Fall 2008

**Public Horticulture (new option)**

**Communications ..... 11 hours**

ENGL 100	Expository Writing I	3
ENGL 200	Expository Writing II	3
SPCH 105	Public Speaking 1 A	2
SPCH 311	Business and Professional Spkg.	3

**Humanities and Social Sciences ..... 9 hours**

PSYCH 110	General Psychology	3
SOCIO 211	Intro to Sociology	3
AMETH 160	Intro to American Ethnic Studies	3

**Math/Chemical Sciences ..... 10 hours**

CHM 110	General Chemistry	3
CHM 111	General Chemistry Lab	1
MATH 100	College Algebra	3
	Statistics Elective	3
	Choose from STAT 325 or 350	

**Agric/Biological Sciences ..... 19 hours**

AGRON 305	Soils	4
BIOL 198	Principles of Biology	4
BIOL 551	Taxonomy of Flowering Plants	4
	Entomology Elective	3
GENAG 101	Ag Orientation	1
PLPTH 500	Principles of Plant Pathology	3

**Business ..... 12 hours**

ACCTG 231	Accounting for Bus Operations	3
AGEC 120	Ag Econ & Ag Business	3
<b>OR</b>		
ECON 120	Microeconomics	3
MANGT 420	Management Concepts	3
MANGT 531	Human Resources Management	3

**Horticulture Requirement ..... 13 hours**

HORT 190	Pre-Internship in Horticulture	1
HORT 201	Principles of Horticultural Science	4
HORT 350	Plant Propagation	3
HORT 590	Internship	5

At public garden facilities. One in horticulture,  
one in education

HORT 599	The Horticultural Profession	0
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**Public Horticulture Specialization .... 31 hours**

HORT 256	Human Dimensions in Hort	3
HORT 275	Horticultural Design I	3
HORT 301	Horticulture Practicum	3
HORT 508	Landscape Maintenance	2
HORT 360	Public Horticulture	3
HORT 570	Greenhouse Operations Mangt.	3
HORT 582	Foundations of Horticulture Pest Management	1
HORT 600	Herbaceous Landscape Plant Prod	2
	Plant materials electives (6 cr.)	
HORT 515	Basic Turfgrass Culture	2
HORT 552	Hort Landscape Construction	1
HORT 555	The Fundamentals of Landscape Irrigation Design	2
HORT 585	Arboriculture	3
HORT 625	Floral Crops Production and Handling	2

**Professional electives from list below 12 hours**

EDADL 212	Intro to Leadership Concepts	2
EDCI 704	Extension Organization & Prin	3
EDCI 706	Prin of Teaching Adults in Extension	3
GEOG 300	Geography of Tourism	3
HRIMD 120	Survey of the Hospitality Industry	1
HRIMD 230	Issues in Tourism	2
RRES 489	Program & Event Planning	3
MC 120	Principles of Advertising	3
MC 180	Fundamentals of Public Relations	3
PSYCH 564	Psychology of Organizations	3
RRES 635	Methods of Environmental Interp	3

**Free Electives ..... 13 hours**

**TOTAL CREDITS FOR GRADUATION 130**

**RATIONALE:**

The public horticulture option is intended for students interested in professional careers which promote horticulture and emphasize people and their education and enjoyment of plants. Such careers include director of a botanical garden or park; city or urban horticulturist; extension agent, teacher, educational director, or program coordinator; professional garden writer/editor or publication manager; public garden curator; and plant collections manager. Initial work on developing this specialization was based on recent and current student interest and the fact that very few universities offer this specialization. Additionally, with the continuing development of the K-State Gardens, K-State has the unique opportunity to become a model university garden demonstrating dynamic linkages between the Gardens and an academic unit of the University. While university gardens are not unique, embedding an academic discipline within a university garden is unique. The creation of the Public Horticulture specialization is one step in the Horticulture Divisions plan to establish K-State Gardens as a model university garden.

**IMPACT:**

No impact outside our department.

**EFFECTIVE DATE:**

Fall 2008

**Attachment 2**  
**Graduate Certificate in Stem Cell Biotechnology**  
**As approved by the Graduate Council on October 2, 2007**

**Introduction**

The Midwest Institute for Comparative Stem Cell Biotechnology (the Institute) was created in 2005 based upon emerging research and intellectual property development resulting from the discovery by Kansas State University personnel of a stem cell population in the matrix of the umbilical cord of humans and also domestic and laboratory animals. A website has been created for the institute: <http://www.vet.ksu.edu/research/stemcell/index.htm>

As is apparent from the website, stem cell research, development of related intellectual property and education in stem cell-related biotechnology are the primary goals. Significant progress has been made in research. All components of the pending patent have been licensed. Fees paid, while confidential under the licensing agreement, are the largest licensing fees ever received by the KSU research foundation by a large margin. The third element of the Institute's aims, education, is the subject of the present proposal.

**Learning objectives**

The overarching purpose of the proposed certificate program is to add value to other degrees in the biological and life sciences, specifically including animal sciences, veterinary medicine, biology and biochemistry.

Specific learning objectives are enumerated in the assessment plan.

**Courses**

The core courses in the certificate are:

**AP 711. Stem Cells and Comparative Biomedicine.** (2) II, S. Characteristics of major categories of stem cells. Applicable or potential clinical uses, including their utilization in tissue engineering or targeted delivery of therapeutics.

**AP 850 Stem Cell Techniques.** (2) I, S. Cellular and molecular techniques and techniques on tissue culture. Lecture and laboratory hours to be determined.

**ASI 802. Gametes, Embryos, and Stem Cells in Farm Animals.** (2) I, in odd years. A study of gametes, embryos, pregnancy, and stem cells in farm species including supporting information from laboratory species and humans. Emphasis will be on the regulation of stem cells, gametes, and embryos and on the conceptus-maternal interactions to establish and maintain pregnancy and program conceptus and postnatal development. Two hours lec. a week. Pr.: BIOCH 521.

**ASI 902 Topics in Stem Cell Biotechnology.** (1) A journal club course in stem cell biotechnology in fall semesters. One semester is required. It can be repeated twice for a total of three credits in the stem cell certificate. Students will evaluate the contribution of scientific papers to the field of stem

cell biology, present scientific data, lead discussions of scientific literature, and become familiar with current concepts in the field of stem cell biology and biotechnology.

Elective courses for emphasis in research or entrepreneurship are:

**AP 710 Microanatomy.** Origin, development and microscopic structure of the cells and tissues for the animal body. Three hours lecture and six hours lab/week. Pr: First year standing in college of veterinary medicine. Fall semester.

**AP 995. Problems in Physiology.** (Var.) I, II, S. Special problem-involving techniques utilized in studying the function of various organ systems of the body. Pr.: Consent of instructor.

**ASI 600. Applied Animal Biotechnology.** (2) II. Emphasis will be placed on the current and future of animals in biotechnology related to food production as well as human medicine applications. Rec. Pr.: Senior standing, BIOCH 521 and ASI 500.

**ASI 961. Graduate Problem in Animal Sciences and Industry.** (1-3) I, II, S. In-depth study of a topic supervised by a member of the graduate faculty. Pr.: Permission of supervising faculty member.

**BIOL 510. Developmental Biology.** (3) II. Introduction to the stages and mechanisms of embryonic animal development. Integrated approach that includes classic experimental embryology and the genetic and molecular regulation of invertebrate and vertebrate animal development. Three hours lec. per week. Pr.: BIOL 450.

**BIOL 670. Immunology.** (4) II. Chemical, genetic, and biological properties of the immune response, acquired immunity, and antibody production. Pr.: Two courses in biology; and a course in biochemistry or equiv.

**BIOL 671. Immunology Lab.** (2) II. Laboratory exercises in immunology. Pr.: BIOL 670 or conc. enrollment. Three-hour lab a week plus one hour rec.

**BIOL 705. Eukaryotic Genetics.** (3) I. An integrated exploration of transmission genetics and molecular genetics of eukaryotic organisms. The focus will be on genetic model organisms and their contributions to our understanding of mechanisms of genetic transmission and exchange, mutagenesis, gene expression, and regulation of cell division and development. Modern approaches to genomic analysis will be discussed. Pr.: BIOL 450 and BIOCH 521.

**BIOL 707. Advanced Cell Biology.** (3) I. Selected current topics in cell biology which reflect recent advances in the field. Major topics include membranes and transport, protein sorting, signal transduction, cell adhesion and motility, cell cycle, apoptosis, and specialized cell functions. Pr.: BIOL 541.

**BIOL 886. Confocal, Fluorescence and Light Microscopy.** (3) I, in odd years. An introduction to theories, functions and applications of confocal, fluorescence and light microscopy, and fluorescent

molecules. Lab emphasis on students working on independent research projects requiring microscopy. Two hours of lecture and three hours of lab per week.

**DMP 705. Principles of Veterinary Immunology.** (2) II. Innate and adaptive defense mechanisms in domestic animals. Topics include vaccinology, immunopathology, autoimmunity, immunodeficiency, and immunomodulation. Pr.: BIOCH 521 and BIOL 455

**DMP 850. Immunology of Domestic Animals.** (3) I. This course is designed to introduce graduate students to immune responses of domestic animals to pathogens and parasites. Pr.: BIOL 541.

**DMP 878. Applications of Flow Cytometry.** (1-3) I, II, S. Theory and practical experience in the use of flow cytometry in diagnosis and research. Pr.: Graduate standing.

**MANGT 845 Technology Entrepreneurship and Strategies.** (3)

No pre-requisites other than enrollment in graduate school. This is an evening course taught by Professor Katz and two practitioners in the technology entrepreneurship field.

**GRAD 820. Leadership Practicum.** (3) I, II. Develops the connections between leadership theory and practice. By conducting a practicum project, students demonstrate the ability to apply concepts and ideas from the study of leadership to a practical leadership problem within an organization. Pr.: GRAD 801 and MANGT 845. The practicum will be developed for stem cell certificate students with the theme “Leading an innovation to market”.

**PLPTH 610. Biotechnology.** (3) I. The use of biotechnology and molecular genetic approaches in plant and animal sciences. Emphasis is on the use of molecular techniques for plant and animal improvement. Three hours lec. per week. Pr.: ASI 500. Same as AGRON 610.

### **Requirements**

Students with graduate standing and a 3.0 GPA in a field in the biological sciences or with a cumulative GPA of 3.0 or higher in the DVM curriculum are eligible to enroll. Exceptions are possible upon approval by the coordinator in consultation with the faculty.

Fifteen hours are required:

AP850, ASI802, ASI902 and AP711 are required. ASI 902 may be taken either two or three times.

Any three of the remaining courses qualify for the remaining credit hour requirements. If BIOL707 is taken, BIOL541 may be required as a pre-requisite.

### **Meeting learning objectives**

The core courses (AP711, AP850, ASI802, ASI902) are designed to ensure a benchmark level of knowledge about stem cell biotechnology. Elective courses are intended to allow for: (1) specific advancement toward research competence in the field or (2) commercialization of stem cell and related technology.

Courses in the certificate may be included in graduate programs upon approval of the student's major professor and advisory committee. Inclusion of courses from other institutions and programs may be substituted for credit in the certificate in stem cell biotechnology with the approval of the program director in consultation with associated faculty.

### **Need for the proposed program**

Stem cell biotechnology and regenerative medicine are emerging as central to the future of human and animal medicine and animal production. A supply of new scientists in basic disciplines with orientation to, or specific training in, stem cell biotechnology will be a necessary part of advancing this area of science, especially as political and social issues are untangled. The research and entrepreneurship tracks provided in the program will allow career flexibility that is becoming an ever-greater necessity for students.

It seems evident that, at this stage of the Institute's development, a graduate level certificate is best suited to capitalize upon the on-going research and intellectual property development. Once a certificate program is successfully established and a significant track record has accrued, consideration will be given to proposal of an interdisciplinary degree. However that would be premature at this juncture and in the near future.

The target audience for the proposed certificate includes graduate students in all the biological sciences, specifically including animal science, veterinary medicine, biology and biochemistry. Also some residents in clinical medicine and surgery may find it advantageous to gain increased expertise in the rising field of regenerative medicine. In addition students in the DVM curriculum that have aspirations toward research or corporate careers would find the certificate in stem cell biotechnology valuable.

### **Organization and Administration**

The governing faculty for the certificate in stem cell biotechnology is comprised of the Kansas State University Founding Fellows of the Midwest Institute for Comparative Stem Cell Biology (see website <http://www.vet.ksu.edu/research/stemcell/index.htm>). The program director will be Duane L. Davis.

The administrative home of the certificate program will be the Institute. The governance of the Institute is explained on the website. Briefly, the Institute is situated administratively in the Office of the Vice President for Research. Oversight is provided by a liaison committee comprised of the Vice President for Research, the Dean of the College of Veterinary Medicine, the Dean of the College of Agriculture and the Vice Chancellor for Research of the University of Kansas Medical Center and an Executive Committee described in the website.

An extensive list of scientists and other faculty members are affiliated with the institute and are listed in the website. These individuals provide a ready source of highly qualified advisors to students in the certificate program.



### **Budget**

The budget is anticipated to be nominal in that all of these courses in the program will be taught for other purposes also.

### **Faculty**

The Founding Fellows of the institute at Kansas State University are Dr. Duane Davis, ASI; Dr. Deryl Troyer, AP; Dr. Mark Weiss, AP. These individuals, along with the program director, will supervise the program.

### **Program Director**

The program director will be Dr. Duane L. Davis, Professor of Animal Sciences and Industry.

### **Learning outcomes and assessment**

Learning outcomes and an assessment plan is attached.

## Cover Sheet for Student Learning Outcomes

**Directions:** For each program (e.g., degree, certificate, minor, secondary major, etc.) and level (undergraduate and graduate), please complete separate cover sheets. Feel free to make copies of this sheet if needed. Those graduate programs with an integrated master's and doctoral program may provide one set of cover sheets.

Department / Unit: Midwest Institute for Comparative Stem Cell Biology  
Title of Academic Program: Graduate Certificate in Stem Cell Biotechnology

Faculty contact(s) for the list of student learning outcomes for this academic program:

Duane Davis \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Type of Degree (check one):

- Bachelor's       Master's       Ph.D.       Ed.D.  
 U. Certificate       Minor       Secondary major       Associate  
 G. Certificate  
 Joint Degree (list the degree types): \_\_\_\_\_  
 Other: \_\_\_\_\_

### List of Student Learning Outcomes for this Degree Program

Please provide an attached list of learning outcomes or copy and insert them below.

1. Students completing the Graduate Certificate in Stem Cell Biotechnology will know cellular and molecular qualities that define stem cells; where stem cells may be found; and how stem cells can be isolated.
2. Students completing the Graduate Certificate in Stem Cell Biotechnology will possess the knowledge and skills that allow them to critically evaluate the peer-reviewed literature in stem cell biology.
3. Students completing the Graduate Certificate in Stem Cell Biotechnology will understand the emerging areas of application of stem cells in regenerative medicine and food animal health and production.

4. Students completing the Graduate Certificate in Stem Cell Biotechnology will possess skills in culture of mammalian stem cells.

5. Students completing the Graduate Certificate in Stem Cell Biotechnology will possess the knowledge, skills and social understanding to critically evaluate and articulate the range of ethical issues associated with stem cell biology.

Please check the description(s) that best reflect the information being submitted.

<input type="checkbox"/>	Faculty for The Midwest Institute for Comparative Stem Cell Biology have reviewed and endorse the list of student learning outcomes being submitted.	Date of Endorsement: _____
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\_\_\_\_\_  
Director, Midwest for Comparative Stem Cell Biology  
Signature

\_\_\_\_\_  
Date

\_\_\_\_\_  
Dean of the Graduate School's Signature  
(Required for Graduate Degree Programs)

\_\_\_\_\_  
Date

**Template  
Degree Program  
Assessment of Student Learning Plan  
Kansas State University**

**X** Check the box if your program's student learning outcomes have been modified since November 2003. If so, please email ([apr@ksu.edu](mailto:apr@ksu.edu)) or attach a hard copy to this document.

College, Department, and Date

Colleges: Veterinary Medicine and Agriculture  
Department: Anatomy and Physiology; Animal Sciences and Industry  
Date: February 23, 2007

Contact Person(s) for the Assessment Plans

**Dr. Duane Davis**

**Degree Program**

Graduate Certificate in Stem Cell Biotechnology

**Assessment of Student Learning Three-Year Plan  
Student learning outcomes:**

- 1. Students completing the Graduate Certificate in Stem Cell Biotechnology will know cellular and molecular qualities that define stem cells; where stem cells may be found; and how stem cells can be isolated.*
- 2. Students completing the Graduate Certificate in Stem Cell Biotechnology will possess the knowledge and skills that allow them to critically evaluate the peer-reviewed literature in stem cell biology.*
- 5. Students completing the Graduate Certificate in Stem Cell Biotechnology will possess the knowledge, skills and social understanding to critically evaluate and articulate the range of ethical issues associated with stem cell biotechnology.*

Relationship to K-State Student Learning Outcomes (insert the program SLOs and check all that apply):

<b>Program SLOs</b>	<b>University-wide SLOs (<u>Graduate Programs</u>)</b>			<i>Program SLO is conceptually different from university SLOs</i>
	<i>Knowledge</i>	<i>Skills</i>	<i>Attitudes and Professional Conduct</i>	
<i>1. Know cellular and molecular qualities that define stem cells; where stem cells may be found; and how stem cells can be isolated.</i>	X			<i>Program SLO is consistent with University SLO.</i>
<i>2. Posses the knowledge and skills that allow them to critically evaluate the peer-reviewed literature in stem cell</i>	X	X		<i>Program SLO is consistent with University SLO.</i>

<i>biology.</i>				
<i>5. Posses the knowledge, skills and social understanding to critically evaluate and articulate the range of ethical issues associated with stem cell biology.</i>			<i>X</i>	<i>Program SLO is consistent with University SLO.</i>

**How will the learning outcomes be assessed? What groups will be included in the assessment?**

	<i>University-wide SLOs (<u>Graduate Programs</u>)</i>			<i>Program SLO is</i>
<i>Program SLOs</i>	<i>Knowledge</i>	<i>Skills</i>	<i>Attitudes and Professional Conduct</i>	<i>conceptually different from university SLOs</i>
<i>1. Know cellular and molecular</i>	<i>1. Direct measure—Capstone</i>			<i>Program SLO is consistent with University SLO.</i>

<p><i>qualities that define stem cells; where stem cells may be found; and how stem cells can be isolated.</i></p>	<p><i>exam.</i></p> <p><i>2. Indirect measure— Career placement of certificate graduates.</i></p>			
<p><i>2. Posses the knowledge and skills that allow them to critically evaluate the peer-reviewed literature in stem cell biology.</i></p>	<p><i>1. Direct measure— Paper presentations and participation in paper discussions in ASI 902 Topic/Stem Cell Biotechnology.</i></p>	<p><i>1. Direct measure—Oral paper presentations and participation in paper discussions in ASI 902 Topic/Stem Cell Biotechnology.</i></p>		<p><i>Program SLO is consistent with University SLO.</i></p>
<p><i>5. Posses the knowledge, skills and social</i></p>			<p><i>1. Direct measure— Attitude survey administered in ASI 902 Topics/Stem Cell</i></p>	<p><i>Program SLO is consistent with University SLO.</i></p>



<i>understanding to critically evaluate and articulate the range of ethical issues associated with stem cell Biotechnology.</i>			<i>Biotechnology</i>	
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**When will these outcomes be assessed? When and in what format will the results of the assessment be discussed?**

*1. Students completing the Graduate Certificate in Stem Cell Biotechnology will know cellular and molecular qualities that define stem cells; where stem cells may be found; and how stem cells can be isolated.*

a. Upon completion of the coursework requirements for the Graduate Certificate in Stem Cell Biotechnology, all certificate seeking students will be expected to take a web-based comprehensive capstone exam covering fundamental aspects of stem cell biology (exam will be updated annually to reflect new developments in the field). Results of the exam will be shared with individual students upon completion. It is expected that students completing the Certificate will score 80 % or greater on the capstone exam. It is recommended that Ph.D. students take the exam prior to, or as a part of, their preliminary examinations and, at the discretion of their graduate committee, it could serve as a part of the determination of their readiness to enter candidacy for the Ph. D. degree.

b. Core scientists in teaching courses and conducting research through the Midwest Institute for Comparative Stem Cell Biology will be heavily engaged in training students that ultimately are awarded the Graduate Certificate in Stem Cell Biotechnology. It is expected that these students will secure employment in academia or allied industries in biomedical sciences. Therefore, placement of all graduate and DVM students after completion of their degrees will be tracked to gain indirect evidence that the Certificate may be adding value to master, doctoral and DVM degrees. Data will be gathered via a web-based survey of graduates administered within 12 months of graduation.

*2. Students completing the Graduate Certificate in Stem Cell Biotechnology will possess the knowledge and skills that allow them to critically evaluate the peer-reviewed literature in stem cell biology.*

a. All students completing the Graduate Certificate will be required to enroll in ASI 902 Topics/Stem Cell Biotechnology. A rubric has been developed (attached) to assess student's working knowledge of stem cell biology as well as their oral communication skills in discussing stem cell biology.

*3. Students completing the Graduate Certificate in Stem Cell Biotechnology will understand and have the skills to articulate the emerging areas of application of stem cells in regenerative medicine and food animal health and production.*

*4. Students completing the Graduate Certificate in Stem Cell Biotechnology will possess skills in culture of mammalian stem cells.*

*5. Students completing the Graduate Certificate in Stem Cell Biotechnology will possess the knowledge, skills and social understanding to critically evaluate and articulate the range of ethical issues associated with stem cell biology.*

a. All students will complete a survey that evaluates attitudes toward the diversity of ethical views surrounding the use of stem cells in animal research and therapeutics. The ability of students to be tolerant and understanding of diverse views will make them more effective professionals once in the workplace. This web-based survey will be updated annually to include developing concerns and views and will be administered to all students in their first semester of enrollment in ASI 802 and again in their final semester in ASI 902 (coincident with completion of the coursework requirements for the Certificate). Completion of both surveys will be a requirement for successful completion of the Certificate.

#### **What is the unit's process for using assessment results to improve student learning?**

The faculty coordinator for ASI 902 in each fall semester offering of the course will be responsible for summarizing assessment data for Certificate graduates from the previous academic year, as well as comprehensive data accumulated from all Certificate graduates (at least three years may be required to accumulate sufficient numbers of Certificate graduates to obtain some measure of reliability of the data). The data will be presented to both core faculty and graduate students sometime during the first four meetings of ASI 902. The data will be discussed (among faculty and students) and where results of assessment point to failure to attain the expected outcome, a corrective course of action will be recommended. This course of action may point to appropriate changes in curriculum and(or) fine tuning of assessment tools.