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

1. Call to Order

2. Approve October 16, 2007 minutes

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

4. Course and Curriculum Changes
   A. Undergraduate Education
      1. 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)

2. 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~~ 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).

3. 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.

4. 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 <u>in Education</u>

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

B. Graduate Education - Bring back to the floor for approval the following curriculum change approved by the Graduate Council on October 2, 2007:

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

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
   B. Committee on Academic Policy and Procedures (CAPP) – Doris Carroll
   C. Student Senate – Tim Weninger
   D. Course and Curriculum ad hoc committee (proposal reviewed under item 3)
   E. General Education Task Force – Melody LeHew

6. Old Business
   A. Final Exam Policy update (CAPP)
   B. Plagiarism Definition (CAPP) – no new information

7. New Business

8. For the good of the University

9. Adjourn

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

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:		TO:	
Required courses:		Required courses:	
CHM 210 Chemistry I	4 hrs	CHM 210 Chemistry I	4 hrs
and		and	

CHM 230 Chemistry II		4 hrs	CHM 230 Chemistry II		4 hrs
~~or~~					
~~CHEM 220 Chem Prin I~~		~~5 hrs~~			
~~and~~					
~~CHEM 250 Chem Prin II~~		~~5 hrs~~			
~~GRSC 101 Intro to GRSC~~		~~3 hrs~~	GRSC 150 Prin. of Milling		3 hrs
~~STAT 320 Elem of Statistics~~		~~3 hrs~~	STAT 325 Statistics		3 hrs
~~or~~					
~~STAT 340 Biometrics I~~		~~3 hrs~~			
BIOCH 521 General Biochemistry		3 hrs	BIOCH 521 General Biochemistry		3 hrs
~~or~~			and		
~~BIOCH 265 Biochemistry~~		~~5 hrs~~	BIOCH 522 General Biochem Lab		2 hrs
FDSCI 501 Food Chemistry		3 hrs	FDSCI 501 Food Chemistry		3 hrs
~~or~~					
~~FDSCI 305 Fund Food Processing~~		~~3 hrs~~			
~~ATM 540 Food Engin Tech~~		~~3 hrs~~	GRSC 540 Eng. Apps in Food	3 hrs	
			GRSC 541 Eng. Apps in Food Lab		1 hrs
~~ASI 318 Fund of Nutrition~~		~~3 hrs~~			
~~or~~					
HN 132 Basic Nutrition		3 hrs	HN 132 Basic Nutrition		3 hrs
~~or~~					
~~HN 400 Human Nutrition~~		~~3 hrs~~			
~~GRSC 630 Mgmt. Apps~~		~~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		8 hrs	Free Electives		6 hrs
Total hours required		128 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:		TO: Required courses:	
MATH 220 An Geom Calculus I	4 hrs	MATH 205 Gen. Calc and Lin. Alg.	3 hrs
BIOCH 265 Int. Organic and Biol Chem	5 hrs	BIOCH 265 Int. Organic and Biol Chem	5 hrs
~~CHM 350 and BIOCH 521~~	~~5 hrs~~		
~~ME 212 Engr Graphics~~	~~2 hrs~~	GRSC 110 Flow Sheets	2 hrs
		GRSC 150 Principle of Milling	3 hrs
PHYS 113 Eng Phys I	4 hrs	PHYS 113 Eng Phys I	4 hrs
and		and	
PHYS 114 Eng Phys II	4 hrs	PHYS 114 Eng Phys II	4 hrs
~~or~~			
~~PHYS 213 Eng Phys I~~	~~4 hrs~~		
~~and~~			
~~PHYS 214 Eng Phys II~~	~~4 hrs~~		
~~ASI 318 Fund of Nutrition~~	~~3 hrs~~		
~~or~~			
HN 132 Basic Nutrition	3 hrs	HN 132 Basic Nutrition	3 hrs
~~or~~			
~~HN 400 Human Nutrition~~	~~3 hrs~~		
~~STAT 320 Elem of Statistics~~	~~3 hrs~~	STAT 325 Statistics	3 hrs
~~or~~			
~~STAT 340 Biometrics I~~	~~3 hrs~~		

FDSCI 501 Food Chemistry	3 hrs	FDSCI 501 Food Chemistry	3 hrs
~~or~~			
~~FDSCI 305 Fund Food Processing~~	~~3 hrs~~		
~~ATM 540 Food Engin Tech~~	~~3 hrs~~	GRSC 540 Eng. Apps in Food	3 hrs
		GRSC 541 Eng. Apps in Food Lab	1 hrs
Select 9 hours from the following:		Business Electives (select 9 hours)	
ACCTG 241 Acctg Investment Finance	3 hrs	ACCTG 241 Acctg Investment Finance	3 hrs
ACCTG 331 Acctg Processes and Controls	3 hrs	ACCTG 331 Acctg Processes and Controls	3 hrs
~~ECON 530 Money and Banking~~	~~3 hrs~~	AGEC 500 Production Economics	3 hrs
		AGEC 515 Food & Agri. Bus. Mktg.	3 hrs
FINAN 450 Principles of Finance	3 hrs	FINAN 450 Principles of Finance	3 hrs
~~FINAN 470 Fin Analysis and Valuation~~	~~3 hrs~~		
IMSE 501 Industrial Managment	3 hrs	IMSE 501 Industrial Managment	3 hrs
MANGT 300 Intro to TQM	3 hrs	MANGT 300 Intro to TQM	3 hrs
MANGT 530 Industrial & Labor Relations	3 hrs	MANGT 530 Industrial & Labor Relations	3 hrs
~~MANGT 531 Pers. & Human Res. Mgmt.~~	~~3 hrs~~		
~~or~~			
~~ECON 523 Human Resource Economics~~	~~3 hrs~~		
MKTG 400 Marketing	3 hrs	MKTG 400 Marketing	3 hrs
MKTG 542 Prof Selling and Sales Mangt	3 hrs	MKTG 542 Prof Selling and Sales Mangt	3 hrs
		Add new category:	
		Specialization Electives (select 3 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	9 hrs	Free Electives	8 hrs
Total hours required	128 hrs	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: Required courses:		TO: Required courses:	
~~AGEC 220 Grain Livestock Mktg Systems~~	~~3 hrs~~		
~~CIS 101-104 (or equivalent PC Course)~~	~~3 hrs~~		
~~MATH 100 College Algebra~~	~~3 hrs~~		
~~MATH 150 Trigonometry~~	~~3 hrs~~		
MATH 205 Gen. Calc and Lin. Alg.	3 hrs	MATH 205 Gen. Calc and Lin. Alg.	3 hrs
Specialization Electives	8 hrs	Specialization Electives	18 hrs
		Add to list: GRSC 745 Fund Bioprocessing	3 hrs
Total hours required	126 hrs	Total hours required	124 hrs

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:		TO: Required courses:	
~~MATH 220 Anal. Geom. & Calc. I~~	~~4 hrs~~	MATH 205 Gen. Calc. and Lin. Alg.	3 hrs
~~BIOCH 265 Intro to Organic Biochemistry~~	~~5 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
~~SPCH 311 Bus & Prof. Speaking~~	~~3 hrs~~		
Select 9 hours from the following:		Specialization Electives (select 11 hours)	
ACCTG 331 Acttg Proc. & Cont.	4 hrs	ACCTG 331 Acttg Proc. & Cont.	4 hrs
AGEC 513 Ag Finance	3 hrs	AGEC 513 Ag Finance	3 hrs
AGEC 515 Food & Agri. Bus. Mktg.	3 hrs	AGEC 515 Food & Agri. Bus. Mktg.	3 hrs
AGEC 632 Agri. Bus. Logistics	3 hrs	AGEC 632 Agri. Bus. Logistics	3 hrs
~~GENAG 390 Ag Employment~~	~~1 hrs~~		
ENGL 516 Writ. Comm. For the Sciences	3 hrs	ENGL 516 Writ. Comm. For the Sciences	3 hrs
MANGT 390 Bus. Law I	3 hrs	MANGT 390 Bus. Law I	3 hrs
MANGT 420 Mgmt. Conc.	3 hrs	MANGT 420 Mgmt. Conc.	3 hrs
MANGT 530 Ind. Labor Relations	3 hrs	MANGT 530 Ind. Labor Relations	3 hrs
MANGT 531 Pers. & Human Res. Mgmt.	3 hrs	MANGT 531 Pers. & Human Res. Mgmt.	3 hrs
~~MANGT 630 Labor Relations Law~~	~~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	6 hrs	Free Electives	3 hrs
Total hours required	129 hrs	Total hours required	129 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:		TO: Required courses:	
~~CE 231 Statics A~~	~~3 hrs~~		
~~ENVD 205 Graphics I~~	~~2 hrs~~		
~~ATM 540 Food Engin Tech~~	~~3 hrs~~	GRSC 540 Eng. Apps in Food	3 hrs
		GRSC 541 Eng. Apps in Food Lab	1 hrs
~~BIOCH 265 Intro to Organic Biochemistry~~	~~5 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	Free Electives	3 hrs
Total hours required	129 hrs	Total hours required	129 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:		TO: Required courses:	
~~CHM 371 Chemical Analysis~~	~~4 hrs~~	CHM 350 Gen. Organic Chemistry	3 hrs
~~CHM 551 Organic Chem II Lab~~	~~2 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	Free Electives	3 hrs
Total hours required	129 hrs	Total hours required	129 hrs

RATIONALE: CE 231 Statics A is no longer considered as essential in the skill set for the chemistry option students in the milling science program.

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:	TO: Horticulture Major with Options in:
Fruit/Vegetable Production	Fruit/Vegetable Production
~~Greenhouse Management~~	Greenhouse and Nursery Management
~~Nursery Management~~	
Landscape Design	Landscape Design
Landscape ~~and Turf~~ Management	Landscape Management
Horticultural Therapy	Horticultural Therapy
Golf Course Management	Golf Course Management
Horticulture Science	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~~		~~I 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 & Biochm	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 374	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~~
~~HORT 575~~	~~Nursery/Garden Cntr. Operations~~	~~3~~
~~HORT 625~~	~~Floral Crops Prod & Handling~~	~~4~~

~~Specialization electives: Choose 4 (12-13 crs)~~

~~AGRON 330~~	~~Weed Science~~	~~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~~
~~HORT 585~~	~~Arboriculture~~	~~3~~
~~HORT 775~~	~~Plant Nutrition/Nutrient Mgmt~~	~~3~~

~~*Nursery management specialization 27-28*~~

~~AGRON 330~~	~~Weed Science~~	~~3~~
~~HORT 374~~	~~Woody Plant Materials I~~	~~3~~
~~HORT 375~~	~~Woody Plant Materials II~~	~~3~~
~~HORT 570~~	~~Greenhouse Operations Mgmt~~	~~3~~
~~HORT 575~~	~~Nursery/Garden Cntr. Operations~~	~~3~~

~~Specialization electives: Choose 4 (12-13 cr)~~

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

HORT 585	Arboriculture	3
HORT 625	Floral Crops Prod & Handling	2

Free Electives 6-11

***Greenhouse and Nursery Management specialization* 32**

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

Specialization electives from list below (9 cr)

HORT 374	Woody Plant Materials I	
HORT 375	Woody Plant Materials II	
HORT 376	Herbaceous Ornamental Plants	3
HORT 377	Plants Interior Environment	3

Specialization electives from list below (11 cr)

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

Any other Horticulture course

Landscape design specialization		**31**
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
~~Design elective~~		~~3~~
Specialization electives from list below (6 cr)		
~~HORT 515~~	~~Turf Management~~	~~3~~
HORT 545	Computer Applications in Design	3
HORT 580	Advanced Horticulture Design	3
HORT 585	Arboriculture	3
Free Electives		5-12

Landscape and turf management specialization		**27**
AGRON 375	Soil Fertility	3
Or		
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
~~Specialization elective~~		~~3~~

Landscape design specialization		**29**
HORT 275	Horticultural Design I	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	2
HORT 510	Horticultural Design II	2
HORT 551	The Business of Landscape Contracting	1
HORT 552	Horticultural Landscape Constr	1
HORT 515	Basic Turfgrass Culture	2
HORT 582	Foundations of Hort Pest Mgt	1
Pest management elective from list below (2 cr)		
HORT 583	Survey of Horticultural Ornamental and Food Crop Pests	1
HORT 587	Turfgrass Diseases & Mgt	
HORT 588	Turfgrass Weeds & Mgt	
HORT 589	Turfgrass Insects & Mgt	
Specialization electives from list below (6 cr)		
HORT 545	Computer Applications in Design	3
HORT 550	Landscape Irrigation Systems	3
HORT 555	Fund of Landscape Irrig Design	3
HORT 580	Advanced Horticulture Design	3
HORT 585	Arboriculture	3
HORT 600	Herbaceous Landscape Plant Prod	2
Free Electives		7-14

Landscape management specialization		**27**
AGRON 375	Soil Fertility	3
Or		
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	2
HORT 515	Basic Turfgrass Culture	2
HORT 550	Landscape Irrigation Systems	3
HORT 551	The Business of Landscape Contr	1
HORT 552	Horticultural Landscape Constr	1
HORT 582	Foundations of Hort Pest Mgt	1
HORT 585	Arboriculture	3
Pest management elective from list below (2 cr)		

Free Electives		4-12
Horticultural Therapy specialization		
Math/chemical science		**10**
~~CHM 210~~	~~Chemistry I~~	~~4~~
MATH 100	College Algebra	3
~~STAT 320~~	~~Elements of Statistics~~	~~3~~
Or		
~~STAT 330~~	~~Elementary Statistics for Social Sciences~~	~~3~~
Horticulture requirement		**23**
HORT 190	Pre-Internship in Horticulture	1
HORT 201	Principles of Horticulture Science	4
HORT 350	Plant Propagation	3
HORT 520	Fruit Production	3
Or		
HORT 560	Vegetable Crop Production	3
Horticulture electives		12
Horticultural Therapy specialization		**28**
~~HORT 235~~	~~Intro to the Horticultural Therapy Profession~~	~~3~~
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
HORT 583	Survey of Horticultural Ornamental and Food Crop Pests	1
HORT 587	Turfgrass Diseases & Mgt	1
HORT 588	Turfgrass Weeds & Mgt	
HORT 589	Turfgrass Insects & Mgt	
Free Electives		7-12
Horticultural Therapy specialization		
Math/chemical science		**10**
CHM 110	General Chemistry	3
CHM 111	General Chemistry Lab	1
MATH 100	College Algebra	3
STAT 325	Intro to Statistics	3
Horticulture requirement		**23**
HORT 190	Pre-Internship in Horticulture	1
HORT 201	Principles of Horticulture Science	4
HORT 350	Plant Propagation	3
HORT 520	Fruit Production	3
Or		
HORT 560	Vegetable Crop Production	3
HORT 599	The Horticultural Professional	0
HORT 582	Foundations of Hort Pest Mgt	1
HORT 583	Survey of Horticultural Ornamental and Food Crop Pests	1
Horticulture electives		10
Horticultural Therapy specialization		**29**
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

		HORT 600 Herbaceous Landscape Plant Prod 2
		HORT 625 Floral Crops Prod & Handling 2
Human science and service requirements....13		**Human science and service requirements ... 12**
~~PHIL 365~~	~~Medical Ethics 3~~	SOCIO 360 Social Problems 3
PSYCH 505	Abnormal Psychology 3	PSYCH 505 Abnormal Psychology 3
PSYCH 520	Life Span Personality Dev	PSYCH 520 Life Span Personality Dev
~~SOCIO 520~~	~~Methods of Social Research 4~~	THTRE 665 Drama Therapy with Special Pop. 3
Professional electives.....12		**Professional electives 12**
ANTH 204	Cultural Anthropology 3	ANTH 204 Cultural Anthropology 3
~~ANTH 510~~	~~Kinship & Marriage in Cross Cult. Perspective~~	
~~ANTH 511~~	~~Cultural Ecology & Economy 3~~	
~~ANTH 618~~	~~Religion in Culture 3~~	
AMETH 160	Intro Am Ethnic Studies 3	AMETH 160 Intro Am Ethnic Studies 3
~~ART 560~~	~~Art for Exceptional Individual 3~~	
BIOL 330	Public Health Biology 3	BIOL 330 Public Health Biology 3
~~BIOL 340~~	~~Structure and Function of the Human Body 8~~	
EDSP 500	Introduction to Human Exceptionality 3	EDSP 500 Introduction to Human Exceptionality 3
		FSHS 110 Intro Human Development 3
		FSHS 310 Early Childhood
		FSHS 350 Family Relationships & Gender Roles 3
FSHS 415	Manual Communication 3	FSHS 415 Manual Communication 3
FSHS 506	Middle Childhd. & Adolescence	FSHS 506 Middle Childhood & Adolescence 3
GERON 315	Introduction to Gerontology 3	GERON 315 Introduction to Gerontology 3
HIST 534	Social History of Medicine 3	HIST 534 Social History of Medicine 3
KIN 220	Biobehavioral Bases of Exercise	KIN 220 Biobehavioral Bases of Exercise
KIN 345	Psychological Dynamics of Physical Activity	KIN 345 Psychological Dynamics of Physical Activity
		MC 180 Fundamentals of Public Relation
		PHIL 365 Medical Ethics 3
PSYCH 202	Drugs & Behavior 2	PSYCH 202 Drugs & Behavior 2
PSYCH 280	Psychology of Childhood and Adolescence 3	PSYCH 280 Psychology of Childhood and Adolescence 3
~~PSYCH 510~~	~~Introduction to Behavior Modification 3~~	
~~PSYCH 520~~	~~Life Span Personal Development 3~~	
		PSYCH 470 Psychobiology 3
		PSYCH 535 Social Psychology 3
		SOCIO 361 Soc. Of Criminal Justice Systems 3
SOCIO 432	Comm Organ & Leadership 3	SOCIO 432 Comm Organ & Leadership 3
SOCIO 460	Juvenile Delinquency 3	SOCIO 460 Juvenile Delinquency 3
~~THTRE 665~~	~~Drama Therapy with Special Populations 3~~	

~~**OR**~~

~~THTRE 674 Drama Therapy with Adolescents 3~~

~~**OR**~~

~~THTRE 675 Drama Therapy with Older Adults3~~

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
Internship		**6**
HORT 190	Pre-Internship in Horticulture	1
HORT 590	Horticulture Internship (at a golf facility)	2
HORT 590	Horticulture Internship (at a golf facility)	3
	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
Internship		**6**
HORT 190	Pre-Internship in Horticulture	1
HORT 590	Horticulture Internship (at a golf facility)	2
HORT 590	Horticulture Internship (at a golf facility)	3
	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 706	Turfgrass Science	3
PLPTH 500	Principles of Plant Pathology	3
Horticulture elective		3
~~Pest management elective~~		~~3~~
Free electives		7-9

HORT 517	Golf Course and Sports Turf Operations	3
HORT 706	Turfgrass Science	3
PLPTH 500	Principles of Plant Pathology	3
HORT 582	Foundations of Hort Pest Mgt	1
HORT 587	Turfgrass Diseases & Mgt	1
HORT 588	Turfgrass Weeds & Mgt	
HORT 589	Turfgrass Insects & Mgt	
Horticulture elective		3
Free electives		6-8

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 &LinearAlgebra	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
	OR	
FOR 375	Intro. to Natural Resource Management	3
AGRON 375	Soil Fertility	3
ATM 653	Water Mgt. and Irrigation Systems	3
	OR	
HORT 550	Landscape Irrigation Systems	3
HORT 201	Principles of Horticultural Science	4
HORT 374	Woody Plant Materials I	3
	OR	
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
Hospitality ..... 4 hours		
HRIMD 220	Environmental Issues in Hosp.	2
HRIMD 340	Contemporary Issues in Controlled Beverages	2

Free Electives ..... 7 hours

Total Credit Hours Required for Graduation1

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 compliments 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
	OR	
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

Public Horticulture Specialization .... 31 hours

HORT 256	Human Dimensions in Hort	3
HORT 275	Horticultural Design I	3
HORT 301	Horiculture 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 manger. 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 posses 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 posses 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.

☐ 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: _____

_____ _____

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) 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 posses 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 posses 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):

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

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

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

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

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

understanding to critically evaluate and articulate the range of ethical issues associated with stem cell Biotechnology.			*Biotechnology*	

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 posses 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 posses 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 stems 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.