Program Review 09-10

AGRICULTURE AND NATURAL RESOURCES

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Program Review 2009-2010

Agriculture and Natural Resources

I. Assessment of Student Learning

1. Program Learning Outcomes:

a. The Program Learning Outcomes for the Associate in Applied Science in Sustainable Tropical Crop Management are as follows:

Knowledge	*Use basic business principles to manage projects or design a horticultural business enterprise.*
Skill	*Recommend cultural practices, solve problems, plan projects, and cultivate horticultural crops in a sustainable manner based on sound biological and technological principles.*
Value	*Explain the relationships between agroecosystems, economics, human culture, and natural environments.*

The Program Learning Outcomes for the Associate in Applied Science in Horticulture and Landscape Maintenance are the same as above including the additional PLO:

Value	*Design gardens that demonstrate aesthetic principles*

b. Program Map

Assessment of Intended Program Learning Outcomes													
Courses in Program	AG 122	AG 174	AG 200	AG 201	AG 230	AG 235	AG 250	AG 251	AG 260	AG 269	AG 281	AG 264	AG 266
1. *Use basic business principles to manage projects or design a horticultural business enterprise.*	1	1	2	1	3	1	1	2	1	0	1	1	1
2. *Recommend cultural practices, solve problems, plan projects, and cultivate horticultural crops in a sustainable manner based on sound biological and technological principles.*	2	2	3	2	0	2	2	3	2	0	2	1	2
3. *Explain the relationships between agroecosystems, economics, human culture, and natural environments.*	2	2	2	2	1	2	1	1	1	1	3	1	1
(Landscape and Horticulture only)													
4. *Design gardens that demonstrate aesthetic principles.*	0	0	0	0	0	1	3	0	1	1	1	0	0
CODE	3 = A focus of course			2 = Evaluate Using Outcome			1 = Not evaluated			0 = Not included			

c. Assessment Plan

Associate in Applied Science Sustainable Tropical Crop Production

PLO	SP 2010	F 2010	Sp 2011	F 2011	SP 2012	F 2012	Sp 2013
1	AG 230				AG 230		
2	AG 251	AG 200		AG 200 and/or AG 235	AG 251	AG 200	
3		AG 174	AG 281			AG 174	AG 281

Associate in Applied Science Horticulture and Landscape Maintenance

PLO	SP 2010	F 2010	Sp 2011	F 2011	SP 2012	F 2012	SP 2013
1	AG 230				AG 230		
2	AG 251	AG 200		AG 200 and/or AG 235	AG 251	AG 200	
3		AG 174	AG 281			AG 174	AG 281
4			AG 250				AG 250

d. Means of Assessment

1. *Use basic business principles to manage projects or design a horticultural business enterprise.*

AG 230: Business Plan Assignment

2. *Recommend cultural practices, solve problems, plan projects, and cultivate horticultural crops in a sustainable manner based on sound biological and technological principles.*

AG 200: Gardens, Poinsettia production
AG 235: Irrigation Plan
AG 251: Market Garden, Garden Plan

3. *Explain the relationships between agroecosystems, economics, human culture, and natural environments.*

AG 174: IPM recommendations
AG 281: Weed Control recommendations

4. *Design gardens that demonstrate aesthetic principles.*

AG 250: Landscape Design Plan

2. Evidence

a. Methods and Evidence

In Spring 2010 the PLO "*Use basic business principles to manage projects or design a horticultural business enterprise."* was assessed within AG 230 Agriculture Business Management using the student learning outcome of creating a business plan. Students create a business plan to design a start-up business or manage an existing business.

Program Assessment Rubric for AG 230 Spring 2010				
PLO: Use basic business principles to manage projects or design a horticultural business enterprise.				
	Exceeds	**Meets**	**Needs Improvement**	**No Proficiency**
Create a Business Plan	39%	33%	16%	11%
Average SLO Score for the Course	39%	33%	16%	11%

In Spring 2010 the PLO "*Recommend cultural practices, solve problems, plan projects, and cultivate horticultural crops in a sustainable manner based on sound biological and technological principles."* was assessed within the AG 251 Sustainable Crop Production course. Students work within the market garden operation and their responses to on a garden plan assignment was assessed. The garden plan assignment asked students to design and plan a market garden for a Community Supported Agriculture (CSA - subscription boxes) for two summer months. The students were given 3 crops and allowed to choose three and had to determine planting times, amounts to plant, garden layout as well as determine certain cultural practices in order to service an 8 week CSA.

Program Assessment Rubric for AG 251 Spring 2010				
PLO: Recommend cultural practices, solve problems, plan projects, and cultivate horticultural crops in a sustainable manner based on sound biological and technological principles.				
SLO: Produce crops in a sustainable manner.	**Exceeds**	**Meets**	**Needs Improvement**	**No Proficiency**
CSA Garden Plan Assignment	82%	0%	5%	12%
UHMC Market Garden	76%	18%	0%	5%
Average SLO Score for the Course	79%	9%	2.5%	8.5%

3. Results

PLO #1 Business Principles: The results of the assessment of the business plan shows that 72% of the students met or exceeded the Program Learning Outcome. It also shows that 16% needed to improve. These students (3 total), did well on the written portion of the plan such as executive summary, vision statements and business description but did not complete the financial portions of the business plan (cash flow, income statement, balance sheet). The students who had no proficiency (2 total) did not turn in the assignment.

This assessment has illustrated that students struggle with the numeric portion of this assignment. They have difficulty finding the necessary information, making estimates based on available information and difficulty in analyzing the budgets that they developed. They do develop an understanding of how to examine the parts of a business and compile a plan for a business that an outsider could use.

PLO #2 Crop Production: This assessment shows that 88% of the students meet or exceed the required outcomes for this PLO. The majority of students developed proficiency in planting, growing, harvesting and packing vegetable crops (16/17). The student who had no proficiency in this area was chronically absent and suddenly showed up the last week to finish the final exam. Most of the students who were proficient in the garden were very able to take what they learned in the market garden and apply that to create a garden plan that would produce a given amount and variety of product for 8 weeks (14/17). Two students did not turn in the CSA garden assignment one made little effort and did very poorly.

Students learn well with hands on training. The final written assignment was an excellent method to give students an opportunity to examine what they had learned, analyze the information and then synthesize this into their own plan and communicate that plan.

4. Planned Changes

a. Changes in Pedagogy: Two major areas of change are needed. One is a refinement of assessment tools to improve the usefulness of information gathered. The other is changes in approach to teaching a particular learning outcome.

Assessment of each SLO or PLO needs to be more refined. For example, the financial parts of the business plan should be assessed separately from the written portions. Additional assessments of other items like questions embedded in exams should also be included to assess the PLO. In AG 251, a more detailed rubric for the

hands-on portion of the market garden is needed. It could include items such as on-time attendance, ability to carry out instructions, ability to work as a team, ability to work independently, and ability to identify and solve problems. The rubric would be given to students and explained at the start of the course to provide students with direction on the goals for the hands-on portion of this class. In addition, it may be useful to examine the results for the entire class as well as a separate analysis of only agriculture majors. This would provide better data to ensure agriculture majors are meeting PLO goals.

For the business PLO, the assessment made it clear that more attention needs to be given to the financial portion of the business plan. Actually creating an estimated cash flow budget, income statement and balance sheet example should be done with the students in class using a moderately difficult crop that has limited information to demonstrate estimating skills. Basic templates for several crops and landscape businesses should be created to assist the students. An additional class assignment on financial analysis of financial statements needs to be carried out. The CSA written assignment needs only minor revisions – for instance a map template for their garden plan and refinements in the assessment rubric for this assignment. An additional embedded assessment within an exam to evaluate this PLO may also be included.

b. Future Goals and Planning: Assessment of the PLO's supports the program goals of providing students with meaningful applied skills that they can use in the workforce. The assessments evaluate students learning of the skills and knowledge being taught and allow instructors to adjust teaching methods to improve. Assessment tools can also help direct students to focus on what is important so that they do a better job at attaining the learning objectives. It will also assist the program in making future curriculum adjustments to meet these goals.

c. Additional Resources: At this time the Agriculture and Natural Resources program does not anticipate additional resources to reach assessment or program goals. However, the program does need the continued support of the assessment coordinator for the CTE programs to assist with assessment tools, data collection and data analysis. The Agriculture and Natural Resources Program is still in a learning curve in this area so support and direction from a coordinator is still necessary.

II. Appendices

A. Institutional and Perkins Data

UHMC Program: Agriculture and Natural Resources
Overall Program Health: Cautionary

	Demand Indicators		Academic Year		Demand Health Call
			08-09	09-10	
1	New & Replacement Positions (State)		376	267	**Cautionary**
2	New & Replacement Positions (County Prorated)		22	51	
3	Number of Majors		31	52	
4	SSH Program Majors in Program Classes		164	401	
5	SSH Non-Majors in Program Classes		281	377	
6	SSH in All Program Classes		445	778	
7	FTE Enrollment in Program Classes		15	26	
8	Total Number of Classes Taught		14	16	

	Efficiency Indicators		Academic Year		Efficiency Health Call
			08-09	09-10	
9	Average Class Size		11.4	15.6	**Healthy**
10	Fill Rate		63%	93%	
11	FTE BOR Appointed Faculty		2	2	
12	Majors to FTE BOR Appointed Faculty		15.3	25.8	
13	Majors to Analytic FTE Faculty		24.2	33.1	
13a	Analytic FTE Faculty		1.3	1.6	
14	Overall Program Budget Allocation		Not Yet Reported	Not Yet Reported	
14a	General Funded Budget Allocation		Not Yet Reported	Not Yet Reported	
14b	Special/Federal Budget Allocation		Not Yet Reported	Not Yet Reported	
15	Cost per SSH		Not Yet Reported	Not Yet Reported	
16	Number of Low-Enrolled (<10) Classes		5	4	

Effectiveness Indicators			Academic Year		Effectiveness Health Call
			08-09	09-10	
17	Successful Completion (Equivalent C or Higher)		83%	72%	**Cautionary**
18	Withdrawals (Grade = W)		3	9	
19	Persistence (Fall to Spring)		56%	67%	
20	Unduplicated Degrees/Certificates Awarded		8	9	
20a	Degrees Awarded		6	1	
20b	Certificates of Achievement Awarded		3	0	
20c	Academic Subject Certificates Awarded		0	0	
20d	Other Certificates Awarded		16	9	
21	Transfers to UH 4-yr		1	1	
21a	Transfers with credential from program		0	0	
21b	Transfers without credential from program		1	1	

B.

Distance Education: Completely On-line Classes			Academic Year		
			08-09	09-10	
22	Number of Distance Education Classes Taught		0	0	
23	Enrollment Distance Education Classes		0	0	
24	Fill Rate		0%	0%	
25	Successful Completion (Equivalent C or Higher)		0%	0%	
26	Withdrawals (Grade = W)		0	0	
27	Persistence (Fall to Spring Not Limited to Distance Education)		0%	0%	

Perkins IV Core Indicators 2008-2009		Goal	Actual	Met	
28	1P1 Technical Skills Attainment	90.00	87.50	Not Met	
29	2P1 Completion	44.00	25.00	Not Met	
30	3P1 Student Retention or Transfer	55.00	62.50	Met	
31	4P1 Student Placement	50.00	100.00	Met	
32	5P1 Nontraditional Participation	16.00	42.11	Met	
33	5P2 Nontraditional Completion	15.25	50.00	Met	

C. Analysis of Institutional Data:

The demand health call was cautionary. However, it is important to note that both student numbers and jobs increased from 08-09 to 09-10. Most reasonable people would conclude these markers indicate demand for this program. Since number of majors (#3) is divided by number of jobs (#2), if jobs go up along with majors then a program will remain cautionary. If however, jobs had remained at the 08-09 level then the program would have

been deemed healthy this year rather than cautionary. Yet an increase in job numbers would normally be viewed as a positive result especially in the current economy.

Student demand numbers increased significantly from the 08-09 academic year as illustrated by the following table:

Demand Indicators			**Academic Year**		
			08-09	**09-10**	**% increase**
3	Number of Majors		31	52	68%
4	SSH Program Majors in Program Classes		164	401	144%
5	SSH Non-Majors in Program Classes		281	377	34%
6	SSH in All Program Classes		445	778	75%
7	FTE Enrollment in Program Classes		15	26	73%

These significant increases in student demand numbers should warrant a positive evaluation toward the Agriculture and Natural Resources program

The Health call for Effectiveness was also cautionary. For the effectiveness indicators degrees earned (#20) is divided by majors (#3). If many new majors are added as was the case for the program this year (normally viewed as a good thing) this in fact causes a program to be viewed in a negative light since this is the divisor. In 08-09, 8 degrees/31 majors = .26 which was healthy. By adding additional majors, who as new students could not be expected to be attaining any degrees or certificates this number plunges to 9/52 = .17 placing the program in cautionary. Another measure of effectiveness divides degrees earned (#20) by replacement positions (#2) once again making a good thing – more jobs available – a negative by decreasing this health call into unhealthy (9/51 = .18). If there had been no increase in jobs then the Agriculture program would have been cautionary 9/22 = .40 receiving a score of 1.

It is interesting to note the outcome of the health call of the program just based on the change in replacement job numbers from 22 in 08-09 to 51 in 09-10:

Indicators	**09-10 data**		**09-10 without increase in replacement jobs (#2=22)**	
Demand (#3/#2)	52/51=1.0	Cautionary = 1	52/22 =2.3	Healthy =2
Efficiency (#10)	93%	Healthy =2	No change	Healthy =2
Efficiency (#12)	25.8	Healthy =2	No change	Healthy =2
Efficiency total (avg)	Healthy = 2		Healthy =2	
Effectiveness (#20/#3)	9/52 = .17	Cautionary =1	No change	Cautionary =1
Effectiveness (#20/#2)	9/51 =.18	Unhealthy = 0	9/22 = .41	Cautionary =1
Effectiveness (#19)	67%	Cautionary =1	No change	Cautionary =1
Effectiveness total	2 = Cautionary (1)		3 = Cautionary (1)	
Total Health Call	1+2 +1 = 4 = Cautionary		2 + 2 +1 = 5 = Healthy	

The program does need to focus on areas that we do have control over such as Effectiveness. The program needs to get more students to complete degrees and certificates and to persist in their studies. The program should also try to collect goals data – is it a student's goal to obtain a degree? There are some students who have no intention of getting a degree but are taking classes for workforce development purposes. The program needs to obtain data on these types of students so that effectiveness could be better evaluated.

The program also needs to continue to focus on recruitment and retention to maintain or increase the number of majors and students in the Agriculture and Natural Resources program and courses.