

## APPENDIX II

Table 1: Learner Outcomes and Assessment: Natural Resource and Environmental Economics

<i>Academic major:</i> Natural Resource and Environmental Economics			<i>Degree awarded:</i> BS Agricultural and Resource Economics		
<i>Person completing report:</i> Dr. William M. Park			<i>Date:</i> June 13, 2013		
<i>College review (name):</i> CASNR (John Stier)			<i>Date:</i> June 14, 2013		
<i>Learner outcome</i>	<i>When assessment was completed</i>	<i>Assessment method(s)</i>	<i>Assessment results and analysis</i>	<i>Action taken</i>	<i>Next scheduled assessment</i>
Students can explain and illustrate economic concepts and principles <u>related to the market system's role</u> in allocating society's resources to and within the food and fiber system.	Spring 2013	<p>A subset of the major field exam's 80 multiple choice questions is used to assess attainment of this learning outcome. The goal is a mean score of 70% and for 75% of each senior class to achieve 60% or better on this subset of questions.</p> <p>During the graduating senior exit group interview conducted each May and December, each senior completes a self-assessment of their degree of attainment of this learning outcome on a 7 point scale, where 1 = strongly disagree, 3 = disagree, 5 = agree and 7 = strongly agree. The goal is a mean rating of 5.5 or better and 80% of students giving a rating of 5 or higher.</p>	<p>Results from the 2010-12 base period for the 10 seniors who took the major field exam show a mean score of 72.0% and that 90.0% of the students scored 60% or better.</p> <p>The self-assessment measure was implemented for the first time in May 2013 for the 2 seniors who attended (out of 2 graduating). The mean rating was 5.5, with 100% giving a rating of 5 or higher.</p> <p>Results from the self-assessment by students and the exam questions reflect attainment of the goals for these assessment measures.</p>	<p>Though the goals associated with the assessment measures were met, this learner outcome is also a learner outcome for the Department's other major. As such, the action plan for the Food and Agricultural Business major is applicable to this major as well, and is restated below.</p> <p>Since the student self-assessment is contradictory with the major field exam analysis, the Departmental Undergraduate Committee is taking three steps in order to gain a better understanding of why students are not attaining to the goal in the direct assessment measure for this learner outcome and to identify possible changes needed in the curriculum to foster a higher attainment level: (a) explore performance of students on multiple choice questions used in the direct assessment measure by conducting detailed item analysis (b) create a formal curriculum map to explicitly tie courses in the curriculum to this learner outcome, and (c) conduct a comprehensive review of courses in the curriculum (current syllabus, teaching pedagogy, exams and required assignments). These steps will be completed by December 2013.</p>	Spring 2014

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Students can explain and illustrate economic concepts and principles <u>related to decision-making by consumers and producers</u> with regard to agricultural commodities, food products, and natural resources.	Spring 2013	<p>A subset of the major field exam's 80 multiple choice questions is used to assess attainment of this learning outcome. The goal is a mean score of 70% and for 75% of each senior class to achieve 60% or better on this subset of questions.</p> <p>During the graduating senior exit group interview conducted each May and December, each senior completes a self-assessment of their degree of attainment of this learning outcome on a 7 point scale, where 1 = strongly disagree, 3 = disagree, 5 = agree and 7 = strongly agree. The goal is a mean rating of 5.5 or better and 80% of students giving a rating of 5 or higher.</p>	<p>Results from the 2010-12 base period for the 10 seniors who took the major field exam show a mean score of 45.3% and that 20.0% of the students scored 60% or better.</p> <p>The self-assessment measure was implemented for the first time in May 2013 for the 2 seniors who attended (out of 2 graduating). The mean rating was 6.5, with 100% giving a rating of 5 or higher.</p> <p>Though results from the self-assessment by students reflect attainment of the goal for that measure, results from the exam questions shows that students are attaining at a very low level relative to the goal for that measure. A preliminary review of the 15 questions used in the direct assessment measure suggests there may be substantial inconsistency between these questions and current curriculum in terms of the coverage of various concepts and principles as well as terminology employed. This</p>	<p>Since the student self-assessment is contradictory with the major field exam analysis, the Departmental Undergraduate Committee is taking three steps in order to better understand why students are not attaining to the goal in the direct assessment measure for this learner outcome and to identify possible changes needed in the curriculum to foster a higher attainment level: (a) explore performance of students on multiple choice questions used in the direct assessment measure by conducting detailed item analysis (b) create a formal curriculum map to explicitly tie courses in the curriculum to this learner outcome, and (c) conduct a comprehensive review of courses in the curriculum (current syllabus, teaching pedagogy, exams and required assignments, etc.). These steps will be completed by December 2013.</p> <p>In addition, the questions from the major field exam used in the direct assessment measure for this learner outcome will be reviewed and if necessary revised for consistency with the current curriculum coverage and terminology, prior to the next administration of the major field exam in December 2013.</p>	Spring 2014

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			may stem from the fact that these questions were written at the time the major field exam was first developed over 15 years ago. The major field exam was developed to meet requirements for assessment on the part of the Tennessee Higher Education Commission, and only 20% of the questions can be modified between its required administrations every five years. See NOTES for additional information relating to the Major Field Test for this major.		

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Students can explain how environmental externalities, public goods, and scarce natural resources cause market failure, identify the effects of market failure on social welfare, and explain how various policy tools can be used to address these effects.	Spring 2013	<p>This learner outcome is assessed by reviewing performance on an 800-1000 word policy article review assignment that is required in AREC 470: Policy Analysis for Environmental and Natural Resource Management. The course instructor and two other faculty members score the assignments using the attached grading rubric and achievement goal.</p> <p>During the graduating senior exit group interview conducted each May and December, each senior completes a self-assessment of their degree of attainment of this learning outcome on a 7 point scale, where 1 = strongly disagree, 3 = disagree, 5 = agree and 7 = strongly agree. The goal is a mean rating of 5.5 or better and 80% of students giving a rating of 5 or higher.</p>	<p>Assessment of performance on the article review assignment was initiated in the Spring 2013 semester, during which five majors were enrolled in AREC 470. Based on the attached scoring rubric, 80% of the students achieved an average score of 2.0 or above, meeting the attainment goal. One limitation of using this assignment as currently structured for assessment purposes is that students choose their own article, making it difficult to maintain consistency in applying the grading rubric across students.</p> <p>The self-assessment measure was implemented for the first time in May 2013 for the 2 seniors who attended (out of 2 graduating). The mean rating was 7.0, with 100% giving a rating of 5 or higher.</p>	<p>The instructor of AREC 470 has agreed to revise the article review assignment for Spring 2014 (course is offered only in the spring semester) to require all students to use the same article so as to enhance consistency in applying the grading rubric across students.</p> <p>An additional assessment measure consisting of fifteen multiple choice questions will be developed and implemented in connection with the major field exam given in AREC 410: Senior Seminar beginning in December 2013.</p>	Spring 2014

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Students can use economic logic and quantitative data to analyze problems and identify solutions related to the food and fiber system, the natural resource base, and environmental quality.	Spring 2013	<p>A subset of the major field exam's 80 multiple choice questions is used to assess attainment of this learning outcome. The goal is a mean score of 70% and for 75% of each senior class to achieve 60% or better on this subset of questions.</p> <p>During the graduating senior exit group interview conducted each May and December, each senior completes a self-assessment of their degree of attainment of this learning outcome on a 7 point scale, where 1 = strongly disagree, 3 = disagree, 5 = agree and 7 = strongly agree. The goal is a mean rating of 5.5 or better and 80% of students giving a rating of 5 or higher.</p> <p>This learner outcome in particular involves use of critical thinking skills. All seniors are required to take the California Critical Thinking Skills Test (CCTST). The goal is a mean score equal to or greater than the College and University means.</p>	<p>Results from the 2010-12 base period for the 10 seniors who took the major field exam show a mean score of 67.3% and that 70.0% of the students scored 60% or better.</p> <p>The self-assessment measure was implemented for the first time in May 2013 for the 2 seniors who attended (out of 2 graduating). The mean rating was 6.0, with 100% giving a rating of 5 or higher.</p> <p>Results from the self-assessment by students and the exam questions reflect attainment of the goal for these assessment measures.</p> <p>Only four majors have taken the CCTST, so there is insufficient data at this time for valid use of results from this assessment measure.</p>	<p>Since the student self-assessment is contradictory with the major field exam analysis, the Departmental Undergraduate Committee is taking three steps in order to better understand why students are not attaining to the goal in the direct assessment measure for this learner outcome and to identify possible changes needed in the curriculum foster a higher attainment level: (a) explore performance of students on multiple choice questions used in the direct assessment measure by conducting detailed item analysis (b) create a formal curriculum map to explicitly tie courses in the curriculum to this learner outcome, and (c) conduct a comprehensive review of courses in the curriculum (current syllabus, teaching pedagogy, exams and required assignments, etc.). These steps will be completed by December 2013.</p> <p>With respect to the CCTST, the Undergraduate Committee has requested a sample copy of the test and a breakdown of scores by the subareas of Analysis, Evaluation, and Inference. This will allow assessment of whether majors are weaker relative to other students in one or more subareas, and if so, then</p>	Spring 2014

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				possible incorporation of assignments or activities designed to enhance critical thinking skills in this subarea into the curriculum. This will be completed by December 2013.	
<p><b>Notes:</b>  All majors are required to take the Food and Agricultural Business major field exam (see explanation below) and the California Critical Thinking Skills Test (CCTST) as part of AREC 410: Senior Seminar in their last fall semester in residence.</p> <p>The Natural Resource and Environmental Economics (NREE) major was approved in 2009. The major has 15-20 majors at this time, with only ten students having graduated in this major to date. As such, a major field exam has not yet been developed in connection with THEC requirements. However, a majority of the core concepts and principles are identical for our two majors. As such, three of the learner outcomes for the NREE major are the same as for our Food and Agricultural Business (FAB) major and can be assessed with the same subsets of questions from the FAB major field exam that are used for assessing these outcomes for FAB majors. The third learner outcome is unique to the NREE major and will be assessed using a different method. The plan is to develop an NREE major field exam for initial administration in December 2015, during the academic year in which our department will be required by THEC to administer major field exams. By this time we expect the number of students graduating from this major to have grown to approximately 10 per year.</p>					

**Instructions:**

1. Academic major: enter the name of the academic major as it appears in the undergraduate or graduate catalog.
2. Degree awarded: provide the type of degree awarded (BA, BS, MA, MS, MLA, PhD, DSW, etc.)
3. Enter one learner outcome in each row (add rows as needed) and then complete the information in each column for the outcome.
4. Number of learner outcomes is decided upon by the faculty in the academic major; typically in the range of three to six outcomes at the program level.
5. Use the notes section to provide any supplemental information regarding program reorganization, restructure, and/or explanatory notes for retiring or major revision to an outcome.

**Definitions:**

<i>Academic major:</i>	Name of the major as it appears in the undergraduate or graduate catalog
<i>Degree awarded:</i>	BA, BS, BFA, MA, MFA, MLA, MS, MSW, PhD, JD, DVM, DNP, etc.
<i>Learner outcome:</i>	What students should be able to demonstrate to know (knowledge), think (attitudes, values), or do (skill) by the end of the program
<i>When assessment was completed:</i>	Specify which term the assessment was completed, i.e., spring 2012

<b><i>Assessment method(s):</i></b>	Assessment tool(s) that will be used to assess specific student learning outcome (senior exit interviews, portfolio review, senior theses, laboratory write-ups, sample work from specific courses, master's theses, doctoral dissertations, surveys of alumni and employers, licensure exams, etc.)
<b><i>Assessment results and analysis:</i></b>	Describe and interpret the results of the assessment
<b><i>Action taken:</i></b>	Describe the specific actions taken by the faculty as a result of the assessment (changes made to specific course(s) or the curriculum)
<b><i>Next scheduled assessment:</i></b>	When this specific learner outcome will again be assessed, i.e., spring 2015



# Natural Resource and Environmental Economics Major

Analytical Rubric for Assessing the Following Learner Outcome

Students can explain how environmental externalities, public goods, and scarce natural resources cause market failure, identify the effects of market failure on social welfare, and explain how various policy tools can be used to address these effects.

Achievement goal is for 75% of majors to achieve an average rating of 2 or better across the three specific assessment criteria below.

Criterion 1: Nature of Market Failure		
Below Expectations	Satisfactory	Exemplary
1	2	3
Explanation may indicate recognition of the policy issue but reflects substantial confusion as to the nature of the market failure and resulting economic inefficiency.	Explanation reflects a solid basic understanding of not only the policy issue but the nature of the market failure and resulting economic inefficiency.	Explanation reflects a high degree of clarity about not only the policy issue but perceptive insights about the nature of the market failure and resulting economic inefficiency.

Criterion 2 – Source of Market Failure		
Below Expectations	Satisfactory	Exemplary
1	2	3
Explanation reflects substantial confusion about the source of the market failure, i.e., whether it is related primarily to presence of externalities, public goods, or natural resource scarcity..	Explanation reflects a clear understanding of the source of the market failure and a basic understanding of why economic inefficiency results.	Explanation reflects an advanced understanding and ability to articulate the linkage between the source of the market failure and the resulting economic inefficiency.

Criterion 3 – Policy Options		
Below Expectations	Satisfactory	Exemplary
1	2	3
Explanation reflects substantial confusion over both what policy options could be implemented to correct the market failure and how they would work.	Explanation reflects recognition of potential policy options for addressing the market failure and a basic understanding of their pro's and con's with respect to economic efficiency.	Explanation reflects a clear understanding of the potential policy options for addressing the market failure and an advanced understanding of their pro's and con's with respect to economic efficiency.

Table 2. Curriculum for Food and Agricultural Business

	<b>Hours</b>	<b>Credit</b>
<b><u>First Year</u></b>		
AREC 110.....	1	
FWF 250*.....	3	
<sup>1</sup> Biological Science Elective* .....	4	
ESS 120* and ESS 220* .....	6	
ENGL 101*, ENGL 102* .....	6	
MATH 123*, MATH 125* .....	6	
PSYC 110* or POLS 102* or SOCI 120* .....	3	
		29
<b><u>Second Year</u></b>		
ACCT 200.....	3	
AREC 212.....	3	
AREC 201* .....	4	
<sup>2</sup> Arts and Humanities Elective* .....	3	
AGNR 291, AGNR 292 .....	2	
CMST 210* or CMST 240* .....	3	
<sup>3</sup> Physical Sciences Elective* .....	4	
ESS 210.....	4	
STAT 201* .....	3	
		29
<b><u>Third Year</u></b>		
AREC 310, AREC 315, AREC 320, AREC 342 or AREC 350, AREC 430 .....	13	
ECON 362 .....	3	
BSET 326 .....	3	
<sup>4</sup> Nondepartmental CASNR Electives .....	6	
PHIL 346* .....	3	
AREC 324.....	3	
		31
<b><u>Fourth Year</u></b>		
AREC 410, AREC 470, AREC 472 .....	7	
ECON 463 .....	3	
<sup>5</sup> Agricultural and Resource Economics Electives .....	6	
ALEC 440* or ENGL 360* .....	3	
ECON 361 or ECON 471, or GEOG 340 or GEOG 345 or 436, or SOCI 360 .....	3	
<sup>2</sup> Arts and Humanities Elective* .....	3	
Electives .....	6	
		31
		Total: 120