

**Program Assessment Plan/Report  
AEAB GRAD Program  
University of Arkansas  
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**Department Name & Contact Information**

**Department:** Agricultural Economics and Agribusiness  
**Contact:** Daniel Rainey; AGECMS Coordinator  
**Phone:** 479-575-5584  
**Email:** rainey@uark.edu

**Department Mission**

Advanced study in Agricultural Economics and Agricultural Business provides students with state of the art knowledge of theory and methods with an ability to affectively apply said knowledge in their career. Thus, enhancing students' ability for leadership positions in the dynamic environment of contemporary agribusiness and production agriculture.

**Program Goals**

- Increase students' knowledge of core concepts and principles in agricultural economics.
- Develop students that can effectively identify and analyze issues of importance to society and understand which tools are most appropriate to analyze and solve the economic problems facing society.
- Develop students that can be effective leaders and agents of change in managing resources and people leading to a more profitable and sustainable agribusiness community / world.
- Improve students' ability to communicate key concepts and analytical findings in a clear and concise manner.

**Summary of AGECS Assessment**

Overall, the department appears to be doing a great job of preparing students to begin their professional careers as Agricultural Economics practitioners. The data that we do currently have indicates that we are performing well in providing our students with the knowledge and skills needed to succeed in Agricultural Economics. Additionally, we have been performing well with getting our MS thesis students engaged with other professionals in academia and the private sector via collaborations on publications and presentations at professional meetings.

**STUDENT LEARNING OUTCOME 1: PROBLEM SOLVING**

*Students graduating from the AGECMS program will understand, identify, analyze (utilizing the appropriate research methods, quantitative tools, and information technology), and formulate solutions to economic problems in the private and public sectors dealing with issues concerning the food and fiber production, processing and distribution and managing natural resources.*

**Assessment Measure 1a. Thesis Project - Thesis Students**

- Students' work for their theses projects will be assessed for how well they identified the key issue being studied and identified appropriate theory and methods to discover a solution.
- This will be indirectly evaluated by the student's theses committee.
- Thesis committee will review thesis then examine the student based on his understanding of key theories and methods and why those concepts were ideal for the problem being examined.

#### **Acceptable and Ideal Targets**

- Students will be able to successfully complete and defend their theses.
- Acceptable: All students will be able to successfully defend their theses each year. Half of these defenses will not need major revisions.
- Ideal: All students will be able to successfully defend their theses within twenty-four (24) months of beginning the AGECMS program. Seventy-five percent (75%) of students submitting their theses for defense will not need major revision. Additionally, twenty percent (20%) will be able to submit a journal manuscript within 120 days of their defense.

#### **Key Personnel**

- Thesis Committee will determine the acceptability of the thesis and whether major revisions are needed.
- The Graduate secretary will track how many manuscripts are submitted post defense.

#### **Summary of Findings**

- Students starting the AGECMS program in the fall 2016 were able to successfully prepare and defend their thesis. At the conclusion of the 2018 spring term, three of the ten thesis students had successfully deposited their theses. Five of the ten students were on track to complete their thesis by the end of July. Two of the ten students were making progress towards the completion of their thesis, but a clear end date had not been established.

#### **Recommendations**

- Given the successful completion (expected completion) of seven of the nine thesis within the expected two year period, we are doing a good job of getting students proper exposure to theoretical and empirical tools to effectively conduct economic analysis. We could do a better job of getting all of the students to identify a project early in their program so that they can complete their degree in the expected time frame.

#### **Assessment Measure 1b. Case Study Project - Non-Thesis Students**

- Students will be given a case to examine during the seminar period.
- This will be indirectly evaluated by the seminar instructor.
- Seminar instructor will examine how students utilized the appropriate theories and methods and why those concepts were ideal for the problem being examined.

#### **Acceptable and Ideal Targets**

- Students will be able to successfully complete and present their case study analysis.
- Acceptable: Fifty percent (50%) of students will be able to successfully develop a solution to the issue identified in the case and use appropriate theories to develop their conclusions.
- Ideal: All students will be able to successfully develop a solution to the issue identified in the case and use appropriate theories to develop their conclusions.

**Key Personnel**

- Seminar Instructor

**Summary of Findings.**

- Non-thesis students were divided into two teams to assess the economic impact of the ban on the use of Dicamba on Arkansas farms for the majority of the upcoming production season (2018/19). Both student groups successfully presented their cases to faculty and other interested parties in late April 2018.

**Recommendations**

- Students need to be better primed to address the questions specifically given to them.
- Highlight oral communication more in seminar and other classes to strengthen students' ability to present results to constituent groups.

**Assessment Measure 2. *Problem Solving forces at work***

- Students will be evaluated on their ability to utilize the appropriate theories and methodologies to attack the problem given.
- This will be directly evaluated by the thesis committee or seminar instructor according to the Problem Solving Rubric below.
- Seminar instructor or Thesis committee will examine how well students clearly define the problem being addressed; identify the appropriate theories and methodologies to examine the problem; formulate consistent hypotheses and solutions; evaluate alternative solutions; prescribe the best solution; and evaluate potential outcomes and additional work needed.

**Acceptable and Ideal Targets**

- Acceptable: Fifty percent (50%) or more of students will be able to score average or above (see Problem Solving rubric).
- Ideal: Seventy-five percent (75%) or more of students will be able to score average or above (see Problem Solving rubric).

**Key Personnel**

- Seminar Instructor or Theses Committees

**Summary of Findings.**

- The rubric has been recently adopted and was utilized for seven students presenting their seminar Dicamba Case Study project. The students were evaluated by three professors (M. Popp, Rainey and Thomsen). The results are below (see Problem Solving Rubric in Appendix A for description of what is expected for each cell).

**Non-Thesis Students Problem Solving Summary results**

	Excellent (4)	Above Average (3)	Average (2)	Needs Improvement (1)	Average student score on a 1-4 scale
Define Problem	32	36	8	0	3.17
Identify Strategies	16	36	16	0	2.83
Propose Solutions / Hypotheses	16	36	16	0	2.83
Evaluate Potential Solutions					
Strategy to Implement Solution	32	24	0	8	2.67
Evaluate (Potential) Outcomes	16	36	16	0	2.83

- The rubric has been recently adopted and was utilized for five students presenting their final thesis results (Defense). The students were evaluated by the professors constituting their committee (the number of evaluators ranged from two – four: committees consist of a minimum of three members but not all faculty submitted their assessment). The results are below (see Problem Solving Rubric in Appendix A for description of what is expected for each cell).

**Thesis Students Problem Solving Summary results**

	Excellent (4)	Above Average (3)	Average (2)	Needs Improvement (1)	Average student score on a 1-4 scale
Define Problem	36	6	4	0	3.54
Identify Strategies	32	9	4	0	3.46
Propose Solutions / Hypotheses	28	18	0	0	3.54
Evaluate Potential Solutions	24	15	4	0	3.31
Strategy to Implement Solution	24	15	2	0	3.15
Evaluate (Potential) Outcomes	28	12	4	0	3.38

- The majority of students are performing “above average” or higher.
- However, many of the non-thesis students could benefit from additional direction on how to Identify Strategies for addressing the problem, Propose Potential Solutions and how to Evaluate Potential Outcomes

#### **STUDENT LEARNING OUTCOME 2: COMMUNICATION**

*Graduates will enhance their ability to prepare, organize, and deliver information to effectively communicate (orally, written, and electronically) with scientific, professional, and non-technical audiences.*

##### **Assessment Measure 1. Project presentation**

- Students will be required to provide an oral defense of their thesis or case-study project (non-thesis)
- This will be directly evaluated by the thesis committee or seminar instructor.
- Students will be evaluated using the Oral Communication Rubric below to assess how well they organize their thoughts; effectively utilize language to keep the audience engaged; demonstrate appropriate posture, gestures and eye contact to project confidence and competence; provide adequate supporting material to help cement key concepts in audiences mind; and the overall presentation effectively demonstrates the key points from the findings.

##### **Acceptable and Ideal Targets**

- Acceptable: Fifty percent (50%) or more of students will be able to score average or above (see Oral Communication rubric).
- Ideal: Seventy-five percent (75%) or more of students will be able to score average or above (see Oral Communication rubric).

##### **Key Personnel**

- Theses examination committees and seminar instructor(s).

##### **Summary of Findings**

- The rubric has been recently adopted and was utilized for seven students presenting their seminar case study project. The students were evaluated by three professors (M. Popp, Rainey and Thomsen). The results are below (see Written Communication Rubric in Appendix A for description of what is expected for each cell).

Case-Study Oral Presentation Summary results

	Excellent (4)	Above Average (3)	Average (2)	Needs Improvement (1)	Average student score on a 1-4 scale
Organization	32	36	8	0	3.62
Language	16	36	16	0	3.24
Delivery	16	36	16	0	3.24
Supporting Material	32	24	0	8	3.04
Central Message	16	36	16	0	3.24

- The rubric has been recently adopted and was utilized for five students presenting their final thesis results (Defense). The students were evaluated by the professors constituting their committee (the number of evaluators ranged from two – four: committees consist of a minimum of three members but not all faculty submitted their assessment). The results are below (see Oral Communication Rubric in Appendix A for description of what is expected for each cell).

Thesis Oral Presentation Summary results

	Excellent (4)	Above Average (3)	Average (2)	Needs Improvement (1)	Average student score on a 1-4 scale
Organization	40	6	2	1	3.50
Language	32	15	2	0	3.50
Delivery	36	15	0	0	3.64
Supporting Material	20	21	4	0	3.21
Central Message	16	21	6	0	3.07

- The majority of the theses students are performing “Excellent”.

**Recommendations**

- Non-Thesis students’ knowledge on how to create and effectively use visual aids needs to be strengthened throughout their MS training.

**Assessment Measure 2. *Theses / Case-study project report***

- Students will be required to provide a written document highlighting the critical issues and key findings for their project.

- This will be directly evaluated by the thesis committee or seminar instructor.
- Students will be evaluated using the Written Communication Rubric below to assess how well they convey the context and purpose for their project; develop content to appropriately express significance of the project and the writers understanding of key parameters and findings; properly communicate the relevance of theory and methods employed; properly site credible and reliable sources for information; and properly utilize language and grammar to deliver their message.

**B. Acceptable and Ideal Targets**

- Acceptable: Fifty percent (50%) or more of students will be able to score average or above (see Written Communication rubric).
- Ideal: Seventy-five percent (75%) or more of students will be able to score average or above (see Written Communication rubric).

**C. Key Personnel**

- These examination committees and seminar instructor(s).

**D. Summary of Findings**

- The Non-Thesis students did not submit a written copy of their analysis of the Dicamba Issue in Arkansas to the evaluators.
- The rubric has been recently adopted and was utilized for five students presenting their final thesis results (Defense). The students were evaluated by the professors constituting their committee (the number of evaluators ranged from two – four: committees consist of a minimum of three members but not all faculty submitted their assessment). The results are below (see Written Communication Rubric in Appendix A for description of what is expected for each cell).

Thesis Written Communication Summary results

	Excellent (4)	Above Average (3)	Average (2)	Needs Improvement (1)	Average student score on a 1-4 scale
Contest and Purpose	28	18	2	0	3.43
Content Development	20	21	4	0	3.21
Genre & Disciplinary Conventions	32	15	2	0	3.50
Sources & Evidence	32	15	2	0	3.50
Control of Syntax	32	15	2	0	3.50

- The majority of the theses students are performing “Above Average” or “Excellent” with regards to their written research work.

- One student was not able to defend his thesis due to writing difficulties and had to delay his defense until the summer (if not later).

**Recommendations**

- Greater effort needs to be dedicated to informing students on proper writing prose.
- Some students could also benefit from the assistance available in the writing lab on campus.

**Assessment Measure 3. Presentations at professional conferences**

- Students will be encouraged to submit material (oral presentations / posters / case studies) to professional organizations to enhance their communication skills.
- This will be indirectly evaluated by the graduate program coordinator.
- Students will be evaluated on the number of abstract submissions to professional organizations and the number of submissions selected for presentation.

**B. Acceptable and Ideal Targets**

- Acceptable: At least 20% of students (50% of thesis students) will submit proposals to at least one professional organization before graduation, with at least 10% (30% for thesis students) having a submission accepted for presentation.
- At least 40% of students (80% of thesis students) will submit proposals to at least one professional organization before graduation, with at least 20% (50% for thesis students) having a submission accepted for presentation.

**C. Key Personnel**

- Graduate program coordinator with significant support from thesis advisors and Graduate Faculty.

**D. Summary of Findings.**

- In 2017-18, 9 current students were involved in 12 presentations at professional meetings or industry groups.
- In 2017-18, 6 recent graduates were involved in 13 presentations at professional meetings or to industry groups.
- No numbers were immediately available for students that submitted proposal but were not selected for presentation.
- We are meeting our goal of having thesis students actively engaged the profession.

**Recommendations**

- Interpretation of results in the context of the Learning Outcome and the program.
  - The level of participation in Professional settings indicates that we are succeeding in getting students started on their professional career.
  - We need to do a better job of getting non-thesis students engaged with presenting their knowledge and skills at professional settings.



**STUDENT LEARNING OUTCOME 3: KNOWLEDGE OF AGRICULTURAL ECONOMICS THEORY AND METHODS**

*The following items apply to EACH Assessment Measure.*

**Assessment Measure 1. Mastery of course subject matter**

- Students will be assessed as to how well they comprehend material in their course of study.
- Students will be indirectly assessed by course instructor.
- Students will be given a series of assignments, exams, and/or projects to demonstrate their knowledge of key Agricultural Economic Concepts and demonstrate their ability to use the appropriate concepts in a given situation.
- Students will be assessed grades based on their demonstrated mastery of core concepts and appropriate use.

**Acceptable and Ideal Targets**

- Acceptable: At least 50% of the students should complete their course of study with a “B+” average (3.33 GPA on a 4.0 scale)
- Ideal: At least 75% of the students should complete their course of study with a “B+” average (3.33 GPA on a 4.0 scale)

**Key Personnel**

- Instructor of record for each Agricultural Economics course taken. Average will be compiled by Graduate coordinator with aid of Graduate Committee support staff.

**Summary of Findings.**

- As seen in the table below, Students have averaged over 3.33.
- The performance for 2015 was the highest average GPA over the past four years.

Year	Number of Graduates	Average GPA
2017-18	17	3.84 (94% > 3.33)

**Recommendations**

- We need to continue to attract students that are well prepared to succeed at the MS level.
- Instructors need to continue to innovate to make content accessible and understandable to students.

**Assessment Measure 2. Core content exam**

- All students are required to take Microeconomics principles and Quantitative Methods. Students will be examined on key concepts at the beginning of each class and again at the end of each class (see list of questions in appendix).
- This will be directly evaluated by the course instructor.
- The change in percentage correct will be reported.

**Acceptable and Ideal Targets**

- Acceptable: Students will show an average increase of 20% after taking the course, i.e. on average students will correctly answer 35% of the questions at the beginning of the course and 55% or better by the end of the course.

- Ideal: Students will show an average increase of 40% after taking the course, i.e. on average students will correctly answer 35% of the questions at the beginning of the course and 75% or better by the end of the course.

#### **Key Personnel**

- Course Instructors with aid from Graduate Committee support staff.

#### **Summary of Findings.**

- For the fall 2017 term, all student in AGEC 5103 “Ag Microeconomics” were administered the basic content quiz at the beginning of the semester and again at the end of the semester. The average result on the quiz was fifty-seven percent (57%) correct at the beginning of the semester and ninety-three percent (88%) at the end of the semester. (*no results were provided for Quantitative Methods for the fall 2017 term*)
- The average score improved 31% points.
- Additionally, 8 of the 17 students (47%) in the class showed an improvement of 40% or more; while 13 of the 17 students (76%) showed an improvement of 20% or more.
- Three students scored 100% and one student scored 80% at the beginning and the end of the semester (accounting for the four students that showed no improvement).

#### **Recommendations**

- Work with all instructors to ensure that tests are administered and / or reported.
- Tracking students’ knowledge attainment needs to be monitored and improved where needed.
- A number of students showed high initial competency and need to be challenged to ensure they are benefiting from the curriculum.

#### **Overall Recommendations**

- We need to do a better job of stressing the importance of active engagement in the profession to non-thesis students.
- We need to find ways to prepare student to better deliver their analytic findings to constituent groups / lay audiences.

#### **Action Plan**

AGEC is highlighting professional engagement during this assessment period. To increase MS student professional engagement (oral and written communication) we will adopt the following steps.

- We will provide encouragement to students to become active participants in the profession.
- Specific actions will include:
  - Challenging students to become more actively engaged in the profession, via academic and/or industry presentations.
  - Provide incentives for students that are actively engaged, i.e. providing more weight to the number of presentations given when considering students for outstanding awards. Also, provide some sort of financial incentive for professional engagement.
  - The primary overseer of engagement will be the Thesis advisor for Thesis students and the Seminar instructor and Graduate Coordinator for non-thesis students.

Other actions for the coming year.

- Throughout the 2018-19 academic year, more faculty will be asked to utilize the learning rubrics and evaluate their usefulness and need for revising / improvement.

- The tests for evaluating the Core Content mastery will be reviewed and needed improvements implemented.

**Supporting Attachments**

- Appendix A: Rubrics for Oral Communication, Written Communication, and Problem Solving are attached.
- Appendix B: The questions for the Core Exam.

# Appendix A

The following pages contain the Rubrics to be used in evaluating Oral Communication, Written Communication, and Problem Solving.

# ORAL COMMUNICATION VALUE RUBRIC

*Adapted from AACU*

## Definition

Oral communication is a prepared, purposeful presentation designed to increase knowledge, to foster understanding, or to promote change in the listeners' attitudes, values, beliefs, or behaviors.

*Evaluators are encouraged to assign a zero to any work sample or collection of work that does not meet benchmark (cell one) level performance.*

	Excellent	Above Average	Average	Needs Improvement
<b>Organization</b>	Organizational pattern (specific introduction and conclusion, sequenced material within the body, and transitions) is clearly and consistently observable and is skillful and makes the content of the presentation cohesive.	Organizational pattern (specific introduction and conclusion, sequenced material within the body, and transitions) is clearly and consistently observable within the presentation.	Organizational pattern (specific introduction and conclusion, sequenced material within the body, and transitions) is intermittently observable within the presentation.	Organizational pattern (specific introduction and conclusion, sequenced material within the body, and transitions) is not observable within the presentation.
<b>Language</b>	Language choices are imaginative, memorable, and compelling, and enhance the effectiveness of the presentation. Language in presentation is appropriate to audience.	Language choices are thoughtful and generally support the effectiveness of the presentation. Language in presentation is appropriate to audience.	Language choices are mundane and commonplace and partially support the effectiveness of the presentation. Language in presentation is appropriate to audience.	Language choices are unclear and minimally support the effectiveness of the presentation. Language in presentation is not appropriate to audience.
<b>Delivery</b>	Delivery techniques (posture, gesture, eye contact, and vocal expressiveness) make the presentation compelling, and speaker appears polished and confident.	Delivery techniques (posture, gesture, eye contact, and vocal expressiveness) make the presentation interesting, and speaker appears comfortable.	Delivery techniques (posture, gesture, eye contact, and vocal expressiveness) make the presentation understandable, and speaker appears tentative.	Delivery techniques (posture, gesture, eye contact, and vocal expressiveness) detract from the understandability of the presentation, and speaker appears uncomfortable.
<b>Supporting Material</b>	A variety of types of supporting materials (explanations, examples, illustrations, statistics, analogies, quotations from relevant authorities) make appropriate reference to information or analysis that significantly supports the presentation or establishes the presenter's credibility/authority on the topic.	Supporting materials (explanations, examples, illustrations, statistics, analogies, quotations from relevant authorities) make appropriate reference to information or analysis that generally supports the presentation or establishes the presenter's credibility/authority on the topic.	Supporting materials (explanations, examples, illustrations, statistics, analogies, quotations from relevant authorities) make appropriate reference to information or analysis that partially supports the presentation or establishes the presenter's credibility/authority on the topic.	Insufficient supporting materials (explanations, examples, illustrations, statistics, analogies, quotations from relevant authorities) make reference to information or analysis that minimally supports the presentation or establishes the presenter's credibility/authority on the topic.
<b>Central Message</b>	Central message is compelling (precisely stated, appropriately repeated, memorable, and strongly supported by economic principles and appropriate methodology.)	Central message is clear and consistent with the supporting material and is based on relevant economic principles and methodologies.	Central message is basically understandable but is not often repeated and is not memorable. Nor is the message consistently tied to economic principles and methodologies.	Central message can be deduced, but is not explicitly stated in the presentation. No direct linkage to economic principles nor methodologies is included in the presentation.

## WRITTEN COMMUNICATION VALUE RUBRIC

*Adapted from AACU*

### Definition

Written communication is the development and expression of ideas in writing. Written communication involves learning to work in many genres and styles. It can involve working with many different writing technologies, and mixing texts, data, and images. Written communication abilities develop through iterative experiences across the curriculum.

*Evaluators are encouraged to assign a zero to any work sample or collection of work that does not meet benchmark (cell one) level performance.*

	Excellent	Above Average	Average	Needs Improvement
<b>Context of and Purpose for Writing</b> <i>Includes considerations of audience, purpose, and the circumstances surrounding the writing task(s).</i>	Demonstrates a thorough understanding of context, audience, and purpose and incorporates relevant economic theory and methodology. Written material is responsive to the assigned task(s) and focuses all elements of the work.	Demonstrates adequate consideration of context, audience, and purpose and incorporates relevant economic theory and methodology and a clear focus on the assigned task(s) (e.g., the task aligns with audience, purpose, and context).	Demonstrates awareness of context, audience, purpose, and to the assigned tasks(s) and mentions related economic theory and methodology (e.g., begins to show awareness of audience's perceptions and assumptions).	Demonstrates minimal attention to context, audience, purpose, and to the assigned tasks(s) (e.g., expectation of instructor or self as audience).
<b>Content Development</b>	Uses appropriate, relevant, and compelling content to illustrate mastery of the subject, conveying the writer's understanding, and shaping the whole work.	Uses appropriate, relevant, and compelling content to explore ideas within the context of the discipline and shape the whole work.	Uses appropriate and relevant content to develop and explore ideas through most of the work.	Uses appropriate and relevant content to develop simple ideas in some parts of the work.
<b>Genre and Disciplinary Conventions</b> <i>Formal and informal rules inherent in the expectations for writing in particular forms and/or academic fields (please see glossary).</i>	Demonstrates detailed attention to and successful execution of a wide range of conventions particular to a specific discipline and/or writing task (s) including organization, content, presentation, formatting, and stylistic choices	Demonstrates consistent use of important conventions particular to a specific discipline and/or writing task(s), including organization, content, presentation, and stylistic choices	Follows expectations appropriate to a specific discipline and/or writing task(s) for basic organization, content, and presentation	Attempts to use a consistent system for basic organization and presentation.
<b>Sources and Evidence</b>	Demonstrates skillful use of high-quality, credible, relevant sources to develop ideas that are appropriate for the agricultural economics.	Demonstrates consistent use of credible, relevant sources to support ideas that are situated within the agricultural economics writing.	Demonstrates an attempt to use credible and/or relevant sources to support ideas that are appropriate for agriculture economics.	Demonstrates an attempt to use sources to support ideas in the writing relevant to agricultural economics.
<b>Control of Syntax and Mechanics</b>	Uses graceful language that skillfully communicates meaning to readers with clarity and fluency, and is virtually error-free.	Uses straightforward language that generally conveys meaning to readers. The language in the portfolio has few errors.	Uses language that generally conveys meaning to readers with clarity, although writing may include some errors.	Uses language that sometimes impedes meaning because of errors in usage.

## PROBLEM SOLVING VALUE RUBRIC

*Adapted from AACU*

### Definition

Problem solving is the process of designing, evaluating, and implementing a strategy to answer an open-ended question or achieve a desired goal.

	<b>Excellent</b>	<b>Above Average</b>	<b>Average</b>	<b>Needs Improvement</b>
<b>Define Problem</b>	Demonstrates the ability to construct a clear and insightful problem statement with evidence of all relevant Agricultural Economics Principles.	Demonstrates the ability to construct a problem statement with evidence of most relevant Agricultural Economics Principles, and problem statement is adequately detailed.	Begins to demonstrate the ability to construct a problem statement with evidence of most relevant Agricultural Economics Principles, but problem statement is superficial.	Demonstrates a limited ability in identifying a problem statement or related Agricultural Economics Principles.
<b>Identify Strategies</b>	Identifies multiple approaches for solving the problem that apply within a specific context.	Identifies multiple approaches for solving the problem, only some of which apply within a specific context.	Identifies only a single approach for solving the problem that does apply within a specific context.	Identifies one or more approaches for solving the problem that do not apply within a specific context.
<b>Propose Solutions / Hypotheses</b>	Proposes one or more solutions/hypotheses that indicates a deep comprehension of the problem. Solution/hypotheses are sensitive to contextual factors as well as all of the following: ethical, logical, and cultural dimensions of the problem.	Proposes one or more solutions/hypotheses that indicates comprehension of the problem. Solutions/hypotheses are sensitive to contextual factors as well as the one of the following: ethical, logical, or cultural dimensions of the problem.	Proposes one solution/hypothesis that is “off the shelf” rather than individually designed to address the specific contextual factors of the problem.	Proposes a solution/hypothesis that is difficult to evaluate because it is vague or only indirectly addresses the problem statement.
<b>Evaluate Potential Solutions</b>	Evaluation of solutions is deep and elegant and considers relevant economic principles and decision tools, reviews logic/reasoning, examines feasibility of solution, and weighs impacts of solution.	Evaluation of solutions is and considers relevant economic principles and decision tools, reviews logic/reasoning, examines feasibility of solution, and weighs impacts of solution.	Evaluation of solutions is brief relevant economic principles and decision tools,, reviews logic/reasoning, examines feasibility of solution, with limited attention to impacts of solution.	Evaluation of solutions is superficial relevant economic principles and decision tools, reviews logic/reasoning, examines feasibility of solution, but ignores the impacts of solution.
<b>Implement Solution</b>	Implements the solution in a manner that addresses thoroughly and deeply multiple contextual factors of the problem.	Implements the solution in a manner that addresses multiple contextual factors of the problem in a surface manner.	Implements the solution in a manner that addresses the problem statement but ignores relevant contextual factors.	Implements the solution in a manner that does not directly address the problem statement.
<b>Evaluate Outcomes</b>	Reviews results relative to the problem defined with thorough, specific considerations of need for further work.	Reviews results relative to the problem defined with some consideration of need for further work.	Reviews results in terms of the problem defined with little, if any, consideration of need for further work.	Reviews results superficially in terms of the problem defined with no consideration of need for further work

## Appendix B

### Questions for Microeconomics Core Competency.

(1). The relationship between a consumer's Utility,  $U$ , and the quantities of two goods,  $x$  and  $y$  is expressed as  $U = x^2y$ . The consumer's marginal utility of consumption of  $x$  is [the derivative of  $U$  with respect to  $x$ , denoted as  $\partial U/\partial x$ ]:

- A.  $x^2$
- B.  $y$
- C.  $x^2y$
- D.  $2xy$
- E. I don't know.

(2). The government is considering two alternatives to help reduce education cost. Plan A provides eligible households with a \$1,000 voucher that can be used for education expenses. Plan B mails a \$1,000 check to eligible households. Which plan will consumers prefer?

- A. Plan A.
- B. Plan B.
- C. Indifferent between plan A and plan B.
- D. Some consumers prefer B, other consumers are indifferent between plan A and plan B.
- E. I don't know.

(3). Blake is currently a manager of a Walmart store, making \$50,000/year. He has recently inherited 1,000 acres farm land. The going rate for farm land rental in his area is about \$30/acre. Crop revenue is \$650/acre and all the non-land production cost is \$580/acre (e.g., seed, fertilizer, fuel, crop insurance, machine repairs). If Blake decides to quit the Walmart job and manage the farm himself, what is his economic profit (crop revenue – economic cost)?

- A. \$70,000.
- B. \$40,000.
- C. -\$10,000.
- D. \$10,000.
- E. I don't know.

(4). Which firm does NOT have economies of scale?

- A. When Walmart expands its output (retail services), it can get lower prices for its major input: things Walmart sells in stores.
- B. The more electricity a nuclear power plant produces, the lower is its average cost.
- C. To expand output, an oil firm has to move from cheaper inputs (fossil fuel directly pumped out of oil wells) to more expensive inputs (oil extracted from oil sand).
- D. The marginal cost of adding one more consumer is almost zero for telecommunication companies.
- E. I don't know.



**(5).** Which policy is the most efficient one?

- A. A policy that generates the largest amount of consumer surplus.
- B. A policy that generates the largest amount of producer surplus.
- C. A policy that generates the largest amount of social welfare (consumer surplus and producer surplus).
- D. A policy that benefits all consumers equally.
- E. I don't know.