

## **Liberal Arts Core Learning Outcomes Revision (LACLOR) Committee – 2019/20 Final Report**

**Patty Szczys and Peter Drzewiecki (Co-chairs)**

**May 15, 2020**

### **Committee Members:**

The committee consists of: Peter Drzewiecki (co-chair), Patty Szczys (co-chair), Caitlin Carenen (past chair), Courtney Broschious, Tim Cochran, Suki Grandhi, Greg Kane, Niti Pandey, Ben Pauly, Kristi Salters-Pedneault, and David Soloff.

### **Committee Charge:**

The LACLOR committee was charged with identifying 4-5 Learning Outcomes to be embedded into Eastern's Liberal Arts Core and construct rubrics which will guide instructors while implementing and assessing these outcomes.

### **Leadership History:**

Caitlin Carenen was chair of the committee during the summer and fall of 2019. Patty Szczys and Peter Drzewiecki were the co-chairs during the spring 2020 semester.

### **Committee Progress:**

In the May 2019 semester, a poll was taken at the University Meeting to collect information from faculty about what they thought were important Liberal Arts learning outcomes. During the summer of 2019, Caitlin Carenen conducted extensive literature investigations of Liberal Arts learning outcomes and programs both online and through discussions with Connecticut College personnel.

During the fall 2019, the committee met weekly and members worked independently to come up with a shortlist of 8 possible learning outcomes. In November 2019 these were presented to the faculty in a "First Look" event and feedback was solicited. Faculty voted on learning outcomes and provided comments on the 8 presented outcomes.

During the first half of the Spring 2020 semester, the committee met weekly for 2 hours and in small working groups for many additional hours to select the 5 learning outcomes that best met Eastern's Liberal Arts mission. The committee also developed rubrics for assessing each learning outcome. These rubrics had their roots in the AAU&C Learning Outcomes rubrics but

were extensively modified to be useful at Eastern. Feedback was solicited and questions were answered about the outcomes/rubrics via a university-wide public forum and an online survey in early March. A Senate Bill (SB 19/20-7, attached) was crafted and presented to the University Senate for additional comments and feedback. Senate Bill 19/20-7 was passed on April 7. The attached Senate Bill SB 19/20-7 includes the chosen outcomes as well as the assessment rubrics for each outcome.

**Continuing Work:**

In May, it was decided that the committee would remain intact and be charged with looking into possible structures for a Liberal Arts Curriculum at Eastern. All committee members agreed to continue to serve.

Respectfully submitted,

Patty Szczys and Peter Drzewiecki

Committee co-chairs

**University Senate**  
EASTERN CONNECTICUT STATE UNIVERSITY  
UNIVERSITY SENATE BILL COVER SHEET

**SB: 19/20-07**

**Policy on Liberal Arts Learning Outcomes**

Sponsoring Parties: Liberal Arts Curriculum Learning Outcomes Revision Ad Hoc Committee

Submitted By: **Senate Executive Committee**

Semester in which proposed changes would become effective: Spring 2020

Text of Bill: \_\_\_\_\_

Introduced in Senate on **24 March 2020**

Returned to Committee on \_\_\_\_\_ Resubmitted to Senate on \_\_\_\_\_

Amended by Senate on \_\_\_\_\_ Tabled by Senate on \_\_\_\_\_

Approved By Senate on \_\_\_\_\_ Disapproved by Senate on \_\_\_\_\_

Sent to University President on \_\_\_\_\_ University President Deadline \_\_\_\_\_

Presidential action reported to Senate on \_\_\_\_\_.

Referred to \_\_\_\_\_ for implementation on \_\_\_\_\_.

**Official Signatures**

\_\_\_\_\_ On \_\_\_\_\_

Andrew H. Utterback  
University Senate President

\_\_\_\_\_ Reasons for Disapproval (below)

Elsa Nunez  
University President

Approved On \_\_\_\_\_  
Date

Disapproved \_\_\_\_\_  
Date

# Policy on Liberal Arts Learning Outcomes

**Preamble:** This bill is a response to the recognized need among Eastern faculty to revise the existing liberal arts learning outcomes, agree upon common definitions of those outcomes, and propose a tool for assessment of those outcomes. In support of Eastern's core values and its mission as Connecticut's public liberal arts university, learning outcomes must be easy to understand and articulate by faculty and by students to potential employers, and must be implemented and assessed in a succinct and honest way. This bill aims to approve five learning outcomes that will be assessed in the liberal arts core curriculum. Below, each learning outcome is defined, explained, and accompanied by a proposed rubric to demonstrate how it can be assessed.

## Policy:

1. The University Senate adopts the following five learning outcomes so defined
2. The University Senate adopts the assessment rubrics for said learning outcomes
3. The University Senate adopts the learning outcome implementation plan

## Rationale and Definition of the Five Liberal Arts Learning Outcomes

The five learning outcomes identified and defined below focus on a range of skills that are central to the ways that thoughtful, liberally educated people approach the world. They cut across disciplines—creativity is not only for artists, but for scientists and social workers as well; quantitative literacy is for poets as well as statisticians. Developing these skills prepares all Eastern students, regardless of major, to face complexity and ambiguity in the many domains they will confront after graduation.

### Critical Thinking

**Rationale:** Liberally educated students are curious and reflective. By practicing critical thinking skills, students develop the habits of questioning, evaluating, and forming educated judgments in preparation for the challenges of personal and professional lives. Critical thinking relates to nearly all situations, careers, environments, and opportunities.

**Definition:** Critical thinking is the analysis and evaluation of complex ideas, artifacts, information, and arguments as a basis for formulating a well-reasoned belief, judgment, or conclusion.

Upon completion of the LAC Curriculum, Eastern students will be able to demonstrate critical thinking by:

- Identifying and stating a problem or issue to be addressed;
- Analyzing and evaluating complex ideas, artifacts, information, and arguments that can address the problem or issue;
- Stating and assessing the assumptions and limitations of ideas, artifacts, information, and arguments that can address the problem or issue; and
- Formulating well-reasoned beliefs, judgments, or conclusions.

Critical Thinking can be assessed by measuring levels of issue identification, evidence, context and assumptions, analysis, and conclusions when analyzing complex problems or issues.

Identification: ability to articulate the issue/problem to be considered

Evidence: ability to select and use ideas, artifacts, information, or arguments to investigate a problem or issue

Context and Assumptions: ability to examine one's own and others' assumptions and their relevance to the problem or issue

Analysis: ability to organize and synthesize ideas, artifacts, information, or arguments in a way that allows an issue or problem to be evaluated

Conclusions: ability to formulate a belief, judgment, or conclusion based on analysis of ideas, artifacts, information, or arguments, including implications and/or limitations

## **Ethical Reasoning**

**Rationale:** Liberally educated students carefully consider how decisions and behaviors affect individuals, communities, and the world. In an increasingly complex and globalized society, it is imperative to contemplate the impact that human actions have on others and to recognize and weigh the ethical implications of different courses of action in life and work.

**Definition:** Ethical Reasoning requires students to recognize ethical issues, identify their own ethical positions and analyze other ethical perspectives in real-world situations in order to consider the impact of decisions and actions on other individuals, society, and the environment.

Upon completion of the LAC Curriculum, Eastern students will be able to demonstrate ethical reasoning by:

- Recognizing ethical issues;
- Identifying their own ethical positions;
- Analyzing other ethical positions; and
- Considering the impact of decisions and actions on other individuals, society, and the environment.

Ethical reasoning can be assessed by measuring levels of recognition of ethical issues, ethical self-awareness, awareness of other ethical positions, evaluation of different ethical perspectives, and an application of ethical perspectives to real world situations.

Recognition of ethical issues—ability to identify a decision that has implications for others as well as their complexities and interrelationships

Ethical self-awareness— ability to analyze and discuss one's own core beliefs and their origins

Awareness of other ethical positions— ability to understand and communicate other ethical perspectives and their origins

Evaluation of different ethical perspectives—ability to state an ethical position and reasonably defend it through analysis of multiple factors including considering other ethical positions and objections, assumptions and limitations of an ethical position

Application of ethical perspectives to real world situations—ability to logically apply ethical perspectives to a real-world situation through support of the position and analysis of implications of the position

## Communication

**Rationale:** Liberally educated students convey their ideas in compelling ways to others. Effective communication involves expressing oneself clearly, accurately, and in a manner suited to the audience and occasion. Effective communication is an essential professional skill.

**Definition:** Communication requires students to recognize and utilize the most appropriate means to address specific audiences in relevant contexts or genres in order to effectively inform or persuade.

Upon completion of the LAC Curriculum, Eastern students will exhibit communication skills by:

- Recognizing and utilizing the most appropriate means to address specific audiences; and
- Employing communication methods relevant to specific contexts or genres to effectively inform or persuade.

Communication can be assessed by measuring levels of abilities to recognize the context and purpose of the work, use the assigned medium skillfully, apply appropriate conventions, develop compelling content, and organize content effectively.

**Context and purpose:** Ability to recognize the target audience, the goals or purpose of the communication, and the context in which the communication is occurring.

**Use of medium:** Ability to use the medium in a manner that communicates the intended meaning with clarity, concision, fluency, and without errors.

**Appropriate conventions:** Ability to demonstrate mastery of the conventions of the genre or discipline, including presentation, formatting, and stylistic choices.

**Content Development:** Ability to select or create content that is relevant and demonstrates mastery of the subject.

**Content Organization:** Ability to fully explore, synthesize, and develop ideas, and communicate ideas with a structured, logical, and/or intuitive flow.

## Creativity

**Rationale:** Liberally educated students adapt and innovate in our rapidly changing world. Although creativity is often associated with the arts, innovative thought and expression are used across the disciplines and in various work situations. The capacity to see new possibilities and to make things that did not exist before is a valuable skill for various fields.

**Definition:** Creativity is the ability to utilize skills and strategies to synthesize ideas, perspectives, information, or materials in original and self-aware ways, and to use that synthesis to generate imaginative acts or products.

Upon completion of the LAC Curriculum, Eastern students will be able to demonstrate Creativity by:

- Utilizing newly acquired strategies and skills within a creative domain;
- Synthesizing ideas, perspectives, information, or materials in original ways;
- Creating an imaginative act or product with new ideas, perspectives, information, and materials; and
- Evaluating the role of their own values, interests, and ideas in the creative process and act or product.

Creativity can be assessed by measuring the acquisition of basic competencies, innovative thinking, the execution of the creative process through a final imaginative act or product, and reflexive awareness.

Acquiring Competencies - ability to utilize strategies and skills within a creative domain

Innovative Thinking (Planning) - ability to synthesize existing ideas or perspectives in new or unique ways while introducing new materials and forms, tackling controversial topics, and/or offering unconventional ideas or solutions in the creative process

Execution of Creativity (Act or Product) - ability to thoroughly apply basic competencies and innovative thinking throughout an imaginative act or product

Reflexive Awareness - ability to evaluate how one's individual perspectives informed and influenced the creative process and product within the confines of the discipline

## Quantitative Literacy

**Rationale:** Liberally educated students understand, reason with, and communicate quantitative information in a wide variety of contexts and everyday situations. In today's technological and data-driven society there is an ever-increasing demand, across disciplines and careers, for the ability to work with quantitative information of all types.

**Definition:** Quantitative literacy is competency in working with numerical data to reason or solve problems, the ability to make judgements and draw conclusions supported by quantitative evidence, and the ability to communicate those arguments utilizing quantitative tools.

Upon completion of the LAC Curriculum, Eastern students will be able to demonstrate quantitative literacy by:

- Interpreting and explaining information presented in quantitative forms (e.g. equations, graphs, diagrams, tables);
- Converting information into quantitative forms when required;
- Creating arguments and arriving at judgments based on quantitative analysis of data; and
- Expressing quantitative evidence in support of arguments

Quantitative literacy can be assessed by measuring levels of interpretation, representation, application/analysis, assumptions, and communication of quantitative information

Interpretation - ability to explain information presented in quantitative forms (e.g., equations, graphs, diagrams, tables)

Representation - ability to convert relevant information into various quantitative forms (e.g., equations, graphs, diagrams, tables)

Application/analysis - ability to make judgments and draw appropriate conclusions based on the quantitative analysis of data, while recognizing the limits of this analysis

Assumptions - ability to make and evaluate important assumptions in estimation, modeling, and data analysis

Communication – ability to express quantitative evidence in support of the argument or purpose of the work (in terms of what evidence is used and how it is formatted, presented, and contextualized)

## **Learning Outcome Implementation Plan**

The Rubrics below have been carefully constructed by adapting related AAC&U rubrics to fit Eastern's specific Learning Outcome Definitions and mission. To test the practicality and ease-of-use, a pilot implementation will be conducted in Fall 2020. The pilot program will include a compensated summer workshop for early adopter instructors to support curricular design.

Using the model already implemented by the Critical Thinking Task Force in the First Year Program, the University Assessment Coordinator along with a trained and compensated Task force, will be responsible for Assessment of student artifacts contributed by early adopter instructors. The Assessment Coordinator will provide aggregate de-identified assessment results to the Liberal Arts Program Committee for the purposes of Program management. Upon request, assessment results for individual courses can be made available only to the course instructor.

Refining language in the Liberal Arts Learning Outcome rubrics is the responsibility of the Assessment Coordinator and Task Force. This facilitates revision of suboptimal rubrics before expanding implementation.

## **Learning Outcome Rubrics**



## Critical Thinking Rubric

Assessment Category	Capstone 4	Milestones		Benchmark 1	Below Benchmark 0
		3	2		
<b>Issue Identification</b>	<b>States and describes</b> issue/problem <b>clearly and comprehensively</b> .	<b>States, describes, and clarifies</b> issues/problem effectively <b>with only minor omissions</b> .	<b>States</b> issues/problem but description <b>leaves some concepts undefined or ambiguous</b> .	<b>States</b> issues/problem <b>without clarification or description</b> .	<b>Does not state</b> the issues/problem.
<b>Evidence</b>	Ideas, artifacts, information, or arguments taken from source(s) with <b>enough interpretation/evaluation</b> to develop a <b>comprehensive</b> analysis or synthesis.	Ideas, artifacts, information, or arguments taken from source(s) with <b>enough interpretation/evaluation</b> to develop a <b>coherent</b> analysis or synthesis.	Ideas, artifacts, information, or arguments taken from source(s) with <b>some interpretation/evaluation</b> , but <b>not enough</b> to develop a coherent analysis or synthesis.	Ideas, artifacts, information, or arguments taken from source(s) <b>without any interpretation/evaluation</b> .	<b>Does not articulate</b> ideas, artifacts, information, or arguments.
<b>Context and Assumptions</b>	<b>Systematically and methodically analyzes</b> one's own and others' assumptions and <b>carefully evaluates</b> the relevance of context when presenting a position.	<b>Identifies one's own and others' assumptions</b> and <b>presents relevant context</b> when presenting a position.	<b>Questions some assumptions</b> and <b>identifies several relevant contexts</b> when presenting a position.	<b>Emerging awareness</b> of some assumptions with <b>limited identification</b> of context when presenting a position.	<b>Does not demonstrate</b> awareness of assumptions and/or context.
<b>Analysis</b>	<b>Organizes and synthesizes</b> ideas, artifacts, information, or arguments to <b>discover insights</b> about the issue/problem.	<b>Organizes</b> ideas, artifacts, information, or arguments to <b>effectively address the issue/problem</b> .	<b>Lists</b> ideas, artifacts, information, or arguments with <b>some organization</b> .	<b>Lists</b> ideas, artifacts, information, or arguments, but they are <b>unorganized</b> and/or <b>unfocused</b> .	<b>Does not list</b> ideas, artifacts, information, or arguments.
<b>Conclusions</b>	States a conclusion that is <b>logical and reflective of informed analysis</b> and presents well-reasoned beliefs and judgements discussed in <b>priority order</b> .	States a conclusion <b>focused solely on analysis</b> , and related beliefs and judgements are clearly identified.	States a <b>general conclusion</b> based on the analysis and some related beliefs and judgements are <b>clearly identified</b> .	States <b>ambiguous, illogical, or unsupported conclusions</b> , and related beliefs and judgments are <b>oversimplified</b> .	<b>Does not state</b> conclusions, beliefs, and/or judgements.

## Ethical Reasoning Rubric

Assessment Category	Capstone	Milestones		Benchmark	Below Benchmark
	4	3	2	1	0
<b>Ethical Issue Recognition</b>	<b>Recognizes ethical issues</b> when presented in a <b>complex, multilayered context</b> <u>and</u> <b>recognizes interrelationships</b> among the issues.	<b>Recognizes ethical issues</b> when issues are presented in a <b>complex, multi-layered context</b> <u>or</u> <b>grasps interrelationships</b> among the issues.	<b>Recognizes basic and obvious ethical issues and grasps (incompletely)</b> the complexities or interrelationships among issues.	<b>Recognizes basic and obvious ethical issues but does not articulate</b> complexities or interrelationships.	<b>Does not recognize</b> basic and obvious ethical issues.
<b>Ethical Self-Awareness</b>	<b>Discusses in detail/ analyzes</b> both one's own core beliefs (conscious and unconscious) as well as their origins and <b>engages in a clear and thoughtful discussion</b> of these beliefs.	<b>Discusses in detail / analyzes</b> both their core beliefs and the origins of these beliefs.	<b>States both core beliefs and the origins</b> of these beliefs.	<b>States their core beliefs or articulates the origins</b> but not both.	<b>Does not state either</b> their core beliefs or their origins.
<b>Awareness of Other Ethical Positions</b>	<b>Discusses in detail/ analyzes</b> other ethical positions as well as their origins and <b>engages in a clear and thoughtful discussion</b> of these beliefs.	<b>Discusses in detail/ analyzes</b> other ethical positions and the origins of these beliefs.	<b>States other ethical positions and the origins</b> of these beliefs.	<b>States other ethical positions or articulates the origins</b> of these beliefs <b>but not both</b> .	<b>Does not state other ethical positions or articulate</b> their origins.
<b>Evaluation of Different Ethical Perspectives</b>	<b>States</b> a position and <b>can adequately and effectively defend a position</b> by addressing objections, assumptions, and limitations of the chosen ethical perspectives and <b>effectively rebuts those considerations</b> .	<b>States</b> a position and <b>can state the objections, assumptions, and limitations</b> of a chosen ethical perspective, <b>but does not adequately address</b> these considerations.	<b>States</b> a position and <b>can state the objections to, assumptions, and limitations</b> of a chosen ethical perspective but <b>does not address them</b> .	<b>States</b> a position but <b>does not state the objections to and assumptions and limitations</b> of a chosen ethical perspective.	<b>Does not state an ethical position</b> .
<b>Application of Ethical Perspectives to Real World Situations</b>	<b>Independently and accurately applies ethical perspectives</b> to a real-world situation and <b>considers full implications</b> of the application.	<b>Independently and accurately applies ethical perspectives</b> to a real-world situation, but the <b>analysis lacks specificity</b> regarding the implications.	<b>Independently applies ethical perspectives</b> to real world situation, but the <b>application is inaccurate or illogical</b> .	<b>Applies ethical perspectives</b> to a real-world situation with support but <b>does not independently apply</b> ethical perspectives.	<b>Does not apply ethical perspectives</b> to a real-world situation.

## Communication Rubric

Assessment Category	Capstone 4	Milestones		Benchmark 1	Below Benchmark 0
		3	2		
<b>Context and Purpose</b>	<b>Demonstrates a thorough understanding</b> of context, audience, and purpose.	<b>Demonstrates an adequate understanding</b> of context, audience, and purpose.	<b>Demonstrates some understanding</b> of context, audience, and purpose.	<b>Demonstrates minimal understanding</b> of context, audience, and purpose.	<b>Does not demonstrate</b> understanding of context, audience, and purpose.
<b>Use of Medium</b>	<b>Uses medium in an elegant way that skillfully communicates meaning</b> to the audience with clarity, concision, and fluency, <b>and without errors.</b>	<b>Uses medium in a straightforward way</b> that communicates meaning to the audience <b>with adequate clarity, concision, and fluency, and with minimal errors.</b>	<b>Uses medium</b> in a way that <b>generally communicates meaning</b> to the audience, but may be <b>lacking in clarity, concision or fluency, or may include errors.</b>	<b>Uses medium</b> in a way that <b>sometimes impedes meaning</b> because of errors in usage.	<b>Does not use medium</b> in a way that communicates meaning.
<b>Appropriate Conventions</b>	<b>Demonstrates mastery of all conventions</b> of presentation, formatting, and stylistic choices.	<b>Demonstrates consistent use of a wide range of conventions</b> of presentation, formatting, and stylistic choices.	<b>Demonstrates use of most conventions</b> of presentation, formatting, and stylistic choices.	<b>Demonstrates use of some conventions</b> of presentation, formatting, and stylistic choices.	<b>Does not use conventions</b> of presentation, formatting, and stylistic choices.
<b>Content Development</b>	<b>Uses appropriate, relevant, and compelling content to illustrate mastery</b> of the subject.	<b>Uses appropriate and relevant content to illustrate good understanding</b> of the subject.	<b>Uses content to illustrate adequate understanding</b> of the subject.	<b>Uses content to illustrate some understanding</b> of the subject.	<b>Does not illustrate understanding</b> of the subject.
<b>Content Organization</b>	<b>Ideas are fully explored, synthesized, and developed, and are clearly structured and follow a logical or intuitive flow.</b>	<b>Ideas are fully explored and somewhat synthesized and developed, and are structured and largely follow a logical or intuitive flow.</b>	<b>Ideas are explored but not synthesized and developed, and some structure is evident but at times does not follow a logical or intuitive flow.</b>	<b>Ideas are not fully explored, there is no evidence of synthesis or development, and structure or logical/intuitive flow is deficient.</b>	<b>Ideas are not explored or developed, and a structured or logical/intuitive flow is absent.</b>

## Creativity Rubric

Assessment Category	Capstone 4	Milestones		Benchmark 1	Below Benchmark 0
		3	2		
<b>Acquiring Competencies</b>	<b>Demonstrates mastery</b> of basic technical skills.	<b>Demonstrates proficiency</b> in basic technical skills.	<b>Demonstrates emerging proficiency</b> in basic technical skills.	<b>Demonstrates minimal proficiency</b> in basic technical skills.	<b>Does not demonstrate</b> minimal proficiency in basic technical skills.
<b>Innovative Thinking (Planning)</b>	<b>Transforms existing approaches</b> while <b>actively seeking out and following through</b> on untested and potentially risky directions or approaches to the assignment guidelines.	<b>Imitates existing approaches</b> while <b>incorporating novel directions</b> or approaches to the assignment guidelines.	<b>Evaluates the appropriateness of various existing approaches</b> for meeting the guidelines of the assignment; <b>considers</b> new directions or approaches.	<b>Recognizes</b> existing approaches while <b>meeting</b> the guidelines of the assignment.	<b>Does not recognize</b> existing approaches or meet the guidelines of the assignment.
<b>Executing Creativity (Product)</b>	<b>Consistently applies basic skills and innovative thinking</b> throughout the imaginative product.	<b>Often applies skills and innovative thinking</b> throughout the imaginative product.	<b>Occasionally applies skills and innovative thinking</b> throughout the imaginative product.	<b>Inconsistently applies skills and innovative thinking</b> throughout the imaginative product.	<b>Does not apply skills or innovative thinking</b> throughout the imaginative product.
<b>Reflexive Awareness</b>	<b>Identifies the origination of ideas, obstacles, and challenges</b> and <b>thoroughly examines</b> the role of the student's values, interests, and experiences in the creative process and product.	<b>Identifies the origination of ideas, obstacles, and challenges</b> and <b>examines</b> the role of the student's values, interests, and experiences in the creative process.	<b>Identifies the origination of ideas, obstacles, and challenges</b> and <b>articulates</b> the role of the student's values, interests, and experiences in the creative process.	<b>Identifies a basic timeline</b> of each stage in creative process with a <b>limited articulation</b> of the role of the student's values, interests, and experiences in the creative process.	<b>Does not identify</b> the stages of the creative process or the role of the student's values, interests, and experiences in the creative process.

## Quantitative Literacy Rubric

Assessment Category	Capstone	Milestones		Benchmark	Below Benchmark
	4	3	2	1	0
Interpretation	Provides accurate explanations of information presented in quantitative forms and makes appropriate inferences based on that information.	Provides accurate explanations of information presented in quantitative forms.	Provides somewhat accurate explanations of information presented in quantitative forms, but occasionally makes minor errors.	Attempts to explain information presented in quantitative forms but draws incorrect conclusions about what the information means.	Does not attempt to explain information presented in quantitative forms
Representation	Skillfully converts relevant information into an insightful quantitative portrayal in a way that contributes to a further or deeper understanding.	Competently converts relevant information into an appropriate and desired quantitative portrayal.	Completes conversion of information but resulting quantitative portrayal is only partially appropriate or accurate.	Completes conversion of information but resulting quantitative portrayal is inappropriate or inaccurate.	Does not complete conversion of information.
Application/ Analysis	Uses the quantitative analysis of data as the basis for deep and thoughtful judgments, drawing insightful, carefully qualified conclusions.	Uses quantitative analysis of data as the basis for competent judgments, drawing reasonable and appropriately qualified conclusions.	Uses quantitative analysis of data as the basis for basic judgments, drawing plausible conclusions.	Uses quantitative analysis of data as the basis for tentative judgments with hesitant or uncertain conclusions.	Does not use quantitative analysis of data as the basis for tentative judgments.
Assumptions	Explicitly describes assumptions and provides compelling rationale for why each assumption is appropriate and shows awareness that confidence in final conclusions is limited by the accuracy of the assumptions.	Explicitly describes assumptions and provides compelling rationale for why assumptions are appropriate.	Explicitly describes assumptions.	Attempts to describe assumptions.	Does not attempt to describe assumptions.
Communication	Uses quantitative information in connection with the argument or purpose of the work, presents it in an effective format, with consistently high quality.	Uses quantitative information in connection with the argument or purpose of the work, though data may be presented in a less effective format.	Uses quantitative information but does not effectively connect it to the argument or purpose of the work.	Presents an argument for which quantitative evidence is pertinent but provides inadequate quantitative support.	Does not present an argument for which quantitative evidence is pertinent.