

# General Education Assessment Plan

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## **General Education Assessment Working Plan Tidewater Community College**

# General Education Assessment Plan

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## I. Introduction: General Education Core Competencies at TCC

In 2006, the State Board for Community Colleges, the governing body of the Virginia Community College System, approved in policy seven general education competency areas to include: Communication (oral and written)<sup>1</sup>, Information Literacy, Critical Thinking, Cultural and Social Understanding, Personal Development, Quantitative Reasoning, and Scientific Reasoning. General education competencies apply to all graduates in both transfer and career and technical degree programs. Further, and per Virginia Community College System Policy 5.0.2.0, “general education is that portion of the collegiate experience that addresses the knowledge, skills, attitudes, and values characteristic of educated persons....unbounded by disciplines and [it] honors the connections among bodies of knowledge.” The competencies, as defined by the State Board for Community Colleges, are included in *Appendix A*.

Given that graduates of transfer and career and technical degree programs are expected to develop in all competency areas, the college is committed to identifying one or more competencies that shall be developed for each course offering. Once identified by the faculty, each faculty member teaching the course is required to fully incorporate one or more course activities that will facilitate and support student development of the agreed-upon competency.

### A. Role of Assessment of General Education Core Competencies

Assessment of general education core competencies is critical to the college’s mission and for accreditation purposes, as recognized in 3.5.1 by the Southern Association of Colleges and Schools Commission on Colleges (SACSCOC).

### B. Role of Faculty in Developing, Implementing, and Maintaining Plan

#### a. Definitions of Coaches, Assessors, and Faculty

1. **Coaches:** Teaching faculty members who are responsible for

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<sup>1</sup> The State Board for Community Colleges defined Communication as a single competency that incorporates both oral and written communication. In May 2012, TCC faculty recommended that the Communication competency be divided into two distinct areas (i.e., oral communication and written communication) for assessment purposes.

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guiding, supporting, and advising Academic Services regarding general education assessment by:

- informing faculty about the college's assessment initiative,
- enlisting faculty involvement in the process,
- assessing student work products (dual role as coach and assessor),
- sharing assessment findings, and
- helping faculty develop assignments and projects that promote student learning.

2. **Assessors:** Teaching faculty volunteers who have completed training to assess student learning in accordance with the appropriate rubrics.

3. **Faculty:** Teaching faculty members of the college at large.

### b. Role of Faculty

During 2011-12, 15 faculty members were recruited by the Vice President for Academic Affairs and Chief Academic Officer to serve as assessment coaches. During fall 2012, the assessment coaches were collectively designated as a subcommittee of the Instruction Committee.

In spring 2012, as one of 12 colleges selected to participate in the Association of American Colleges and Universities' (AAC&U's) Roadmap Project, TCC chose the AAC&U Value Rubrics for use in the assessment of its general education competencies. These rubrics are the framework TCC is using to assess cumulative learning outcomes in general education competency areas versus content mastery for a particular course—a major shift for TCC faculty. Nearly 200 faculty were initially introduced to this concept in May 2012 at the college's annual *Learning Institute*. At this meeting, faculty also adapted VALUE Rubrics for Written Communication, Oral Communication, and Information Literacy.

A preliminary five-year assessment cycle was drafted in fall 2012, shared with faculty at Convocation, reviewed by existing governance committees under the leadership of the Instruction Committee, and eventually finalized. Further, at a follow-up *Learning Institute* in

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October, 75 faculty participated in adapting rubrics created by AAC&U for Quantitative Reasoning and Critical Thinking as well as developing an original rubric for Scientific Reasoning.

During fall 2012, 40 faculty volunteers completed training to assess student learning in Written Communication and Information Literacy. The faculty volunteers, some of whom had already participated, also completed training in spring 2013 to assess student learning in Critical Thinking, Scientific Reasoning, and Quantitative Reasoning. During the 2012-13 academic year, 64 assessors evaluated student learning in five general education competency areas: Written Communication, Information Literacy, Critical Thinking, Scientific Reasoning, and Quantitative Reasoning.

In May 2013, 160 faculty attended the *Learning Institute*. Unlike the previous learning institutes that focused on theory and the basic concepts of general education assessment, there was a purposeful movement to application-based workshops and presentations. At the *Learning Institute*, student learning findings from assessment of Written Communication and Information Literacy were shared. Faculty were also given hands-on experience in assessing a student work product for student learning in Written Communication. Multiple workshops were offered to assist faculty in developing assignments to foster student learning in many of the competency areas. Finally, faculty developed the college's Personal Development rubric which was finalized in fall 2013.

One year later, general education assessment continued to be the primary focus of the May 2014 *Learning Institute*. An assessment consultant, Linda Suskie, was hired to review the college's draft general education assessment plan along with findings through fall 2014, and was the featured speaker at this May 2014 event. Large group and small group exercises were conducted to aid the participating faculty in developing assignments to help students achieve course learning outcomes while also developing them in the general education competency areas. Training for faculty interested in serving as assessors was offered also.

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## **II. Assessment Planning and Development**

A preliminary plan and assessment cycle were developed by Academic Services and approved in fall 2012. Based on findings and lessons learned during the pilot along with college resources, a revised and more extensive plan was developed during summer 2013 and subsequently approved by the Instruction Committee in spring 2014.

### **A. Assessment Pilot**

According to the preliminary plan and through a predetermined rotation, one to three of the general education competencies were to be assessed each semester over the next five years, beginning with academic year 2012-13. In each rotation, student assignments were collected from a variety of courses that seemingly contributed to the general education competency under assessment. The assignments, or student work products, were not additional requirements for selected courses; rather, the assignments were authentic and embedded as requirements for all students enrolled in the courses.

Beginning in fall 2012, the college launched the plan as a pilot project. Each competency was piloted once.

#### **a. Sampling**

Course selection input was solicited from assessment coaches. Then, the courses recommended for inclusion underwent a two-fold process ensuring: 1) the General Education Competencies under study were indicated on official course outlines in i-INCURR; and 2) proposed courses had a significant number of enrollees with 30 or more credits at TCC, had student enrollees from both degree types (career/ technical and transfer) who were representative of TCC's degree-seeking population, and were offered in a variety of course formats (traditional, hybrid, online) as identified by the Office of Institutional Effectiveness (OIE). Courses selected for assessment are listed in Appendix C. Students selected for inclusion during the pilot were those who had earned 30 or more academic credits and were identified for participation by OIE through a stratified random sample process.

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For each general education competency area, 50 students were randomly selected for inclusion in the pilot. Uncertain of what to expect regarding the faculty response rate, student attrition, and the appropriateness of the work products submitted, an additional 25 students were randomly selected as “substitutes” for each competency area. The goal was to collect and assess 50 student work products for each competency during the pilot.

### **b. Methods**

Prior to each semester, faculty whose classes were selected for inclusion were contacted by Academic Services to inform them of their course’s inclusion and general expectations. Once the tuition deadline date passed for classes to adjust for student attrition, OIE submitted a list of selected students to Academic Services. Academic Services contacted each respective faculty member informing them of the student(s) selected for inclusion along with detailed instructions for submitting a student work product(s). Upon receipt of each student work product, Academic Services coded it and removed all student, course, and faculty identifiers before assessment to protect anonymity.

Twenty-five trained assessors scored the student work products submitted each semester during the pilot phase. Each work product was reviewed by two assessors who assigned a score between 0 (no display of learning) and 4 (capstone-level learning) for each dimension constituting a general education competency area. When the score differential was one or less, the two scores were averaged so that the student had a final score for the dimension. If scores differed by more than one on any dimension, a third assessor was requested. The third score was used to average a dimension score<sup>2</sup>. A third score was also requested in cases where one of the first two assessors submitted an actual score value and the other indicated a score could not be assigned because the student was not instructed to display a particular dimension of the competency under study. When this happened, the third assessor’s score was either averaged with the other score or the

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<sup>2</sup> When a third assessor is needed for any one dimension, the third assessor’s score value is currently used on all dimensions to average score values.



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final score assigned was “Not Applicable” because the third assessor also indicated that the assignment could not be scored for that dimension.

### **B. Findings from Pilot**

Data were analyzed for each competency to arrive at an overall mean score, for possible rating on a scale from 0 to 4, on each dimension as were two independent mean scores for comparison of students in career and technical degree programs and transfer degree programs.

#### **a. Student Learning in Written Communication in Fall 2012**

VALUE Rubric for Written Communication is located in *Appendix D*.

Of the 50 work products assessed for Written Communication, 15 required review by a third assessor. Students’ greatest strength in Written Communication was on the Context of and Purpose for Writing dimension. Students need most assistance in the Sources and Evidence area. The Sources and Evidence dimension received the most NA scores indicating that this learning outcome was required least consistently by assignments included in the study (see Table 1).

Table1 illustrates student performance on the Written Communication learning outcome.

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**Table 1**

*Written Communication Average Score as a Function of Dimension and Curriculum Type (with Standard Deviations in Parentheses) Fall 2012*

Dimension	Curriculum Type		
	Overall	Career/Technical	Transfer
Context of and Purpose for Writing	2.20 (.90) N=50	2.30 (1.08) N=23	2.13 (.72) N=27
Content Development	1.87 (.85) N=50	1.91 (.93) N=23	1.82 (.80) N=27
Genre & Disciplinary Conventions	1.95 (.64) N=49	1.89 (.89) N=22	1.98 (.67) N=27
Sources and Evidence	1.73 (1.00) N=28	1.63 (.86) N=12	1.81 (1.15) N=16
Control of Syntax and Mechanics	1.86 (.68) N=50	1.94 (.92) N=23	1.78 (.75) N=27

### **b. Student Learning in Information Literacy Fall 2012**

VALUE Rubric for Information Literacy is located in *Appendix D*.

Of the 44 student work products assessed for Information Literacy, 33 were reviewed by a third assessor. A third assessor was frequently called to review instances where one assessor assigned a score of "NA" and the other assigned a numerical score.

Students demonstrated the greatest need of development in the Evaluation of Information and its Sources dimension for the Information Literacy competency (see Table 2). This is comparable with the results for the Written Communication competency, where the data show a weakness in the Sources and Evidence dimension. With an overall mean value of 2.55 for determining the Nature and Extent of Information Needed dimension, it was apparent that this is an area of strength in terms of student learning.

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Table 2 illustrates student performance on the Information Literacy learning outcome.

**Table 2**

*Information Literacy as a Function of Dimension and Curriculum Type (with Standard Deviations in Parentheses) Fall 2012*

Dimension	Curriculum Type		
	Overall	Career/Technical	Transfer
Nature and Extent of Information Needed	2.48 (.83) N=33	2.39 (1.08) N=14	2.55 (.64) N=19
Access of Needed Information	1.98 (.71) N=25	1.94 (.58) N=9	2.00 (.82) N=16
Evaluation of Information and its Sources	1.67 (.77) N=27	1.60 (.78) N=10	1.71 (.81) N=17
Use Information Effectively	2.09 (.86) N=32	1.96 (1.19) N=11	2.17 (.68) N=21
Use Information Ethically and Legally	1.78 (.83) N=27	1.67 (.90) N=9	1.83 (.84) N=18

### c. Student Learning in Critical Thinking Spring 2013

VALUE Rubric for Critical Thinking is located in *Appendix D*.

Fifty-eight (58) work products were collected for the assessment of student learning in Critical Thinking. Of the 58, 41 required the review of a third assessor because the scoring between the initial two reviewers differed significantly according to scoring specifications.

Student work products scored higher overall and by degree type on the Explanation of Issues and Evidence dimensions (see Table 3). Students need most assistance in the dimensions of Influence of Context and Assumptions and Student's Position/Perspective. Given that only 19 of the 58 work products collected could be used to assess student learning on the Solving Problems dimension, it appears that assignments

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did not require the demonstration of student learning in this area.

Table 3 illustrates student performance on the Critical Thinking learning outcome.

**Table 3**

*Critical Thinking as a Function of Dimension and Curriculum Type (with Standard Deviations in Parentheses) Spring 2013*

Dimension	Curriculum Type		
	Overall	Career/Technical	Transfer
Explanation of Issues	1.98 (.72) N=56	1.91 (.57) N=20	2.02 (.79) N=36
Evidence	1.67 (.63) N=52	1.87 (.69) N=17	1.57 (.58) N=35
Influence of Context and Assumptions	1.27 (.74) N=50	1.44 (.87) N=18	1.18 (.66) N=32
Student's Position/ Perspective	1.41 (.79) N=53	1.77 (.97) N=19	1.21 (.60) N=34
Conclusions and Related Outcomes	1.56 (.71) N=56	1.74 (.76) N=20	1.46 (.67) N=36
Solving Problems	1.43 (.75) N=19	1.71 (.76) N=7	1.26 (.73) N=12

### d. Student Learning in Quantitative Reasoning Spring 2013

VALUE Rubric for Quantitative Reasoning is located in *Appendix D*.

Of the 50 student work products for Quantitative Reasoning, 40 required the review of a third assessor. Of the 50 work products collected and assessed for Quantitative Reasoning, only 21 could be assessed on the Communication dimension and only 11 were deemed as assessable for the Assumptions dimension.

When student learning was assessed on the Communication dimension, students performed well. Students' greatest strengths in

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terms of Quantitative Reasoning included Calculation and Representation dimensions. Application/Analysis and Assumptions dimensions were the areas in need of greatest development for students according to data. Of the work products assessed, the Interpretation, Assumptions, and Communication dimension showed high levels of variance between students in Career/Technical and Transfer programs, with students in the Career/Technical programs displaying higher levels of the competency dimensions than students in Transfer programs (see Table 4).

Table 4 illustrates student performance on the Quantitative Reasoning learning outcome.

**Table 4**

*Quantitative Reasoning as a Function of Dimension and Curriculum Type (with Standard Deviations in Parentheses) Spring 2013*

Dimension	Curriculum Type		
	Overall	Career/Technical	Transfer
Interpretation	1.77 (.94) N=30	2.00 (1.00) N=13	1.59 (.87) N=17
Representation	2.02 (.87) N=42	2.06 (.93) N=18	1.99 (.84) N=24
Calculation	2.33 (.74) N=44	2.38 (.88) N=17	2.30 (.65) N=27
Application/Analysis	1.82 (.99) N=38	1.82 (.92) N=17	1.81 (1.07) N=21
Assumptions	1.59 (1.11) N=11	1.71 (1.29) N=7	1.38 (.85) N=4
Communication	2.13 (.91) N=21	2.26 (1.01) N=13	1.94 (.73) N=8

### e. Student Learning in Scientific Reasoning Spring 2013

VALUE Rubric for Scientific Reasoning is located in *Appendix D*.

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Of the 50 student work products assessed for Scientific Reasoning, 33 required evaluation by a third assessor. Many could not be evaluated because the assignment did not require the student to develop and/or present the dimensions under study.

Students demonstrated greatest need of development on the Conclusions, Limitations, and Implications and Existing Knowledge, Research and/or Views Dimensions. With an overall mean value of 1.81 for Methodology and 1.78 for Argument or Topic Selection, these dimensions show higher levels of student learning than the others (see Table 5). However, all dimensions are in need of improvement.

Table 5 illustrates student performance in the Scientific Reasoning learning outcome.

**Table 5**

*Scientific Reasoning as a Function of Dimension and Curriculum Type (with Standard Deviations in Parentheses) Spring 2013*

Dimension	Curriculum Type		
	Overall	Career/Technical	Transfer
Argument or Topic Selection	1.78 (.81) N=29	2.00 (.80) N=8	1.69 (.81) N=21
Existing Knowledge, Research and/or Views	1.41 (.77) N=29	1.28 (.94) N=9	1.48 (.70) N=20
Methodology	1.81 (1.05) N=24	1.75 (1.13) N=6	1.83 (1.06) N=18
Analysis	1.62 (.81) N=29	1.57 (.79) N=7	1.64 (.83) N=22
Conclusions, Limitations and Implications	1.33 (.78) N=29	1.17 (.83) N=9	1.41 (.77) N=20

### **f. Student Learning in Oral Communication Fall 2013**

VALUE Rubric for Oral Communication is located in *Appendix D*.

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Thirty-three (33) student work products were collected for the assessment of Oral Communication learning outcomes. Of the 33, 13 required the review of a third assessor because the scoring between the initial two reviewers differed significantly according to the scoring specifications.

Assessors scored all 33 work products submitted for Oral Communication on all dimensions. The assignments submitted either required the demonstration of each dimension, or the students spontaneously demonstrated learning outcomes in each dimension.

Students achieved the highest scores on the Central Message dimension, with an average score of 2.21. TCC students need more development in the dimensions of Delivery and Supporting Material with average scores of 1.75 and 1.81 respectively (see Table 6). The Supporting Material and Language dimensions showed higher levels of variance between students in the Career/Technical and Transfer programs, with students in the Transfer programs displaying higher levels of the competency than the students in the Career/Technical programs.

Table 6 illustrates student performance in the Oral Communication learning outcome.

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**Table 6**

*Oral Communication Average Score as Function of Dimension and Curriculum Type (with Standard Deviations in Parentheses) Fall 2013*

Dimension	Curriculum Type		
	Overall	Career/Technical	Transfer
Organization	2.06 (.75) N=33	1.98 (.70) N=7	2.08 (.78) N=26
Language	2.12 (.56) N=33	1.83 (.36) N=7	2.20 (.59) N=26
Delivery	1.81 (.70) N=33	1.76 (.58) N=7	1.82 (.74) N=26
Central Message	2.21 (.69) N=33	2.31 (.47) N=7	2.18 (.75) N=26
Supporting Material and Implications	1.75 (.93) N=33	1.29 (.83) N=7	1.87 (.93) N=26

### **g. Student Learning in Cultural and Social Understanding Fall 2013**

VALUE Rubric for Cultural and Social Understanding is located in *Appendix D*.

Fifty-five (55) student work products were collected for the assessment of student learning in Cultural and Social Understanding. Of the 55, 52 required the review of a third assessor because the scoring between the initial two reviewers differed significantly according to the scoring specifications.

Of the 55 work products submitted for Cultural and Social Understanding, only 9 were accessible for the Skills - Recognize the role of language in social and cultural contexts dimension, and only 12 were accessible for the Skills – Recognize the impact that arts and humanities have upon individuals and cultures dimension. The remaining assignments did not instruct students to demonstrate the learning outcomes in these dimensions, and students did not spontaneously demonstrate these learning outcomes. Therefore, these work products could not be scored for these dimensions.



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Further, there were no dimensions for this competency for which all work products submitted could be scored. The dimension with the most accessible work products was the Knowledge – Assess the impact that institutions have on individuals and culture, for which 38 of the 55 work products could be scored.

Students achieved the highest scores on the Knowledge – Describes their own as well as others’ personal ethical systems and values dimension, with an average score of 1.80. TCC students need more development in the dimensions of Skills – Recognize the impact that the arts and humanities have upon individuals and cultures and Skills – Recognize the role of language in social and cultural contexts with average scores of 1.18 and 1.28 respectively (see Table 7).

The Skills – Recognize the role of language in social and cultural contexts dimension showed a higher level of variance between students in Career/Technical and Transfer programs, with students in the Transfer programs displaying higher levels of the competency than the students in the Career/Technical programs.

Table 7 illustrates student performance in the Cultural and Social Understanding learning outcome.

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**Table 7**

*Cultural and Social Understanding Average Score as Function of Dimension and Curriculum Type (with Standard Deviations in Parentheses) Fall 2013*

Dimension	Curriculum Type		
	Overall	Career/Technical	Transfer
Knowledge (Assess the impact that institutions have on individuals and culture)	1.43 (.57) N=38	1.38 (.50) N=19	1.49 (.64) N=19
Knowledge (Describe their own as well as others' personal ethical systems and values within social institutions)	1.80 (.54) N=31	1.89 (.34) N=14	1.72 (.67) N=17
Skills (Recognize the impact that the Arts and humanities have upon Individuals and cultures)	1.18 (.59) N=12	1.29 (.58) N=4	1.13 (.62) N=8
Skills (Recognize the role of language In social and cultural contexts)	1.28 (.37) N=9	1.21 (.28) N=7	1.50 (.71) N=2
Skills (Recognize interdependence of world-wide social, economic, geo-political, and cultural systems)	1.41 (.38) N=27	1.38 (.33) N=14	1.45 (.43) N=13

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### **h. Student Learning in Personal Development Spring 2014**

VALUE Rubric for Personal Development is located in *Appendix D*.

Forty-nine (49) student work products were collected for the assessment of student learning in Personal Development. Of the 49, 42 required the review of a third assessor because the scoring between the initial two reviewers differed significantly according to the scoring specifications.

Of the 49 work products collected for Personal Development, 45 were accessible for the Decision-Making dimension and 43 were accessible for the Personal Wellness dimension. Only 29 work products were accessible for the Social and Interpersonal Development dimension.

Students achieved the highest scores on the Decision-Making and Academic and Professional Goal-Setting dimensions with average scores of 1.86 in each of these dimensions (see Table 8). These two dimensions showed higher levels of variance between Career/Technical and Transfer students than the other dimensions, with Career/Technical students performing better on the Decision-Making dimension and Transfer students performing better on the Academic and Professional Goal Setting dimension. TCC students need more development in the dimensions of Social and Interpersonal Development and Personal Identity with scores of 1.55 and 1.60 respectively.

Table 8 illustrates student performance in the Personal Development learning outcome.

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**Table 8**

*Personal Development Average Score as Function of Dimension and Curriculum Type (with Standard Deviations in Parentheses)*

Dimension	Curriculum Type		
	Overall	Career/Technical	Transfer
Personal Wellness	1.76 (.64) N=43	1.79 (.66) N=18	1.74 (.64) N=25
Decision-Making	1.86 (.62) N=45	1.96 (.75) N=17	1.79 (.52) N=28
Academic and Professional Goal-Setting	1.86 (.77) N=41	1.75 (.80) N=17	1.93 (.76) N=24
Social and Interpersonal Development	1.55 (.87) N=29	1.60 (.61) N=13	1.50 (1.05) N=16
Personal Identity	1.60 (.64) N=38	1.67 (.46) N=14	1.56 (.73) N=24

### **i. General Summary of Student Learning Findings from Pilot**

Pilot findings offer a glimpse of student learning and provide benchmark “scores” for TCC students. Additional analyses are offered in *Appendix E*. Most importantly, the findings serve as a springboard for discussions with faculty and subsequent curriculum and pedagogical changes.

### **j. Administrative Findings from Pilot**

College officials responsible for collecting and preparing student work products and notifying faculty of their responsibilities learned early on that these processes were arduous and could be accomplished more easily through automation. With support from the college’s Office of Information Systems, a software tool was developed that allows for student work products to be scanned and

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randomly directed to two assessors for scoring. When a third assessor is needed, the work product is assigned to a third assessor for review. Additionally, when faculty have not submitted the required work products for selected students, they receive automated notices and reminders. This tool, which automates much of the process and also allows assessors to score student work products at any time and from any computer, was launched in fall 2013.

Educating faculty about the initiative evolved into what the assessment coaches have referred to as a “marketing blitz.” Even after several opportunities to learn about the initiative, through various modes, some faculty seemed unaware and/or unclear of the initiative and its intent. Faculty who have been actively engaged in the process understand the reasoning behind the initiative and know how critical the initiative is to the college. One significant lesson learned is that faculty on the leading edge of this initiative need to be ambassadors to their colleagues and have greater visibility at the governance level.

Another lesson the college learned is that piloting the process was the right thing to do. Having a larger sample size would have only compounded the arduous nature of this initiative. Once each general education competency has been pilot tested and improvements made based on its first assessment round, the college shall increase the sample size to 125 students with the goal of collecting and accessing 100 student work products per competency each cycle.

Finally, through the pilot, the college learned that assignments required and submitted by faculty often did not adequately develop and/or direct students to demonstrate the competency dimensions under assessment. Without an ability to assess student learning in one or more dimensions, it is difficult to set benchmarks or goals or to adequately affect change.

### **III. Assessment Plan**

The general education assessment plan has been developed, in part, from

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lessons learned during the pilot stage. The evolution of this plan is probable and will be contingent upon the data that are gathered, analyzed, and used to enhance and improve teaching and learning.

According to the predetermined rotation shown below in Table 9, each competency will be assessed two to three times over a five-year period. Student work products will be authentic and embedded requirements for all students enrolled in the courses selected.

**Table 9**

*General Education Competency: Assessment Rotation*

Competency	2012-2013	2013-2014	2014-2015	2015-2016	2016-2017
Written Communication	FALL		FALL		FALL
Oral Communication		FALL <sup>3</sup>		FALL	
Critical Thinking	SPRING	SPRING		SPRING	
Cultural/Social Understanding		FALL		FALL	
Information Literacy	FALL		FALL		FALL
Quantitative Reasoning	SPRING		SPRING		SPRING
Scientific Reasoning	SPRING		SPRING		SPRING
Personal Development		SPRING		SPRING	

### A. Sampling

The course selection pool will include those that have identified the targeted competency as one that is developed in the course, have a significant number of enrollees with sophomore status, have student enrollees from both degree types (career/technical and transfer) who are representative of TCC's degree-seeking population, and that are offered in

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<sup>3</sup> Student work products for fall 2013 assessment were collected in summer 2013.

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a variety of course formats (traditional, hybrid, online). A course shall not be used more than once during an academic year for general education assessment. Students selected for inclusion shall be those who have earned 45 or more academic credit hours, versus 30 or more credit hours, to more adequately assess students who are closer to graduation. In instances where a representative sample cannot be obtained with students who have earned 45 or more credit hours, the college will revert to the sampling of students with 30 or more credit hours. As in the past, students will be identified for participation by OIE through a stratified random sample process. For each general education competency, 125 students will be randomly selected for inclusion with the goal of collecting and accessing 100 student work products per competency each cycle.

### **B. Methods**

Prior to each semester, faculty whose classes are selected for inclusion will be contacted by Academic Services to inform them of their course's inclusion and general expectations. Once the tuition deadline date passes for classes to adjust for student attrition, OIE will submit a list of selected students to Academic Services. Academic Services will upload the list within the new software tool for faculty notification purposes. As student work products are collected, Academic Services will remove all student, course, and faculty identifiers before uploading them to the new software tool. Although assessors will have the opportunity to receive and score assignments throughout the semester, prior feedback indicates that faculty wish to continue to come together as a group to accomplish this. According to the proposed plan, assessors will enter their scores electronically and a third assessor will be automatically assigned as required following the same logic used in the pilot. The same logic will also be followed in assigning final scores for each competency dimension.

### **C. Findings**

Data were analyzed for each competency to arrive at an overall mean score, for possible rating on a scale from 0 to 4, on each dimension as were two independent mean scores for comparison of students in career and technical degree programs and transfer degree programs.

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### **a. Student Learning in Critical Thinking Spring 2014**

VALUE Rubric for Critical Thinking is located in *Appendix D*.

One hundred (100) student work products were collected for the assessment of student learning in Critical Thinking for the spring 2014 cycle. Of the 100, 77 required the review of a third assessor because the scoring between the initial two reviewers differed significantly according to the scoring specifications.

Of the 100 work products collected for Critical Thinking, 94 were accessible for the Explanation of Issues, Student's Position – Perspective, Thesis/Hypothesis, and Conclusions and Related Outcomes dimensions. Ninety (90) were accessible for the Influence of Context dimension. While the Solving Problems dimension continued to be the least accessible Critical Thinking dimension with 66 accessible work products, the percentage of accessible work products for this dimension increased from 33% in the fall 2013 cycle to 66% in the fall 2014 cycle.

Students achieved the highest scores on the Explanation of Issues and Evidence dimensions with average scores of 1.81 and 1.64 respectively (see Table 10). Career/Technical and Transfer students demonstrated equal scores on these dimensions. Influence of Context and Assumptions and Student's Position – Perspective, Thesis/Hypothesis were the dimensions with the lowest scores, 1.39 and 1.38 respectively. The most variation between scores for Career/Technical and Transfer students was on the Solving Problems dimension with Career/Technical scoring higher than Transfer students.

Average scores by dimension for the spring 2014 assessment of Critical Thinking are similar to the scores for the spring 2013 cycle (see Figure 1). Student scores were the highest on the Explanation of Issues dimension for both cycles and lowest on the Influence of Context and Assumptions and Student's Position dimensions.

Table 10 illustrates student performance in the Critical Thinking learning outcome.



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**Table 10**

*Critical Thinking Average Score as Function of Dimension and Curriculum Type (with Standard Deviations in Parentheses) Spring 2014*

Dimension	Curriculum Type		
	Overall	Career/Technical	Transfer
Explanation of Issues	1.81 (.73) N=94	1.81 (.78) N=42	1.81 (.69) N=52
Evidence	1.64 (.68) N=87	1.64 (.81) N=38	1.64 (.56) N=49
Influence of Context and Assumptions	1.39 (.64) N=90	1.42 (.73) N=39	1.36 (.56) N=51
Student's Position - Perspective, Thesis/ Hypothesis	1.38 (.66) N=94	1.45 (.75) N=42	1.33 (.57) N=52
Conclusions and Related Outcomes	1.52 (.63) N=94	1.58 (.78) N=42	1.46 (.48) N=52
Solving Problems	1.43 (.76) N=66	1.56 (.81) N=29	1.34 (.71) N=37

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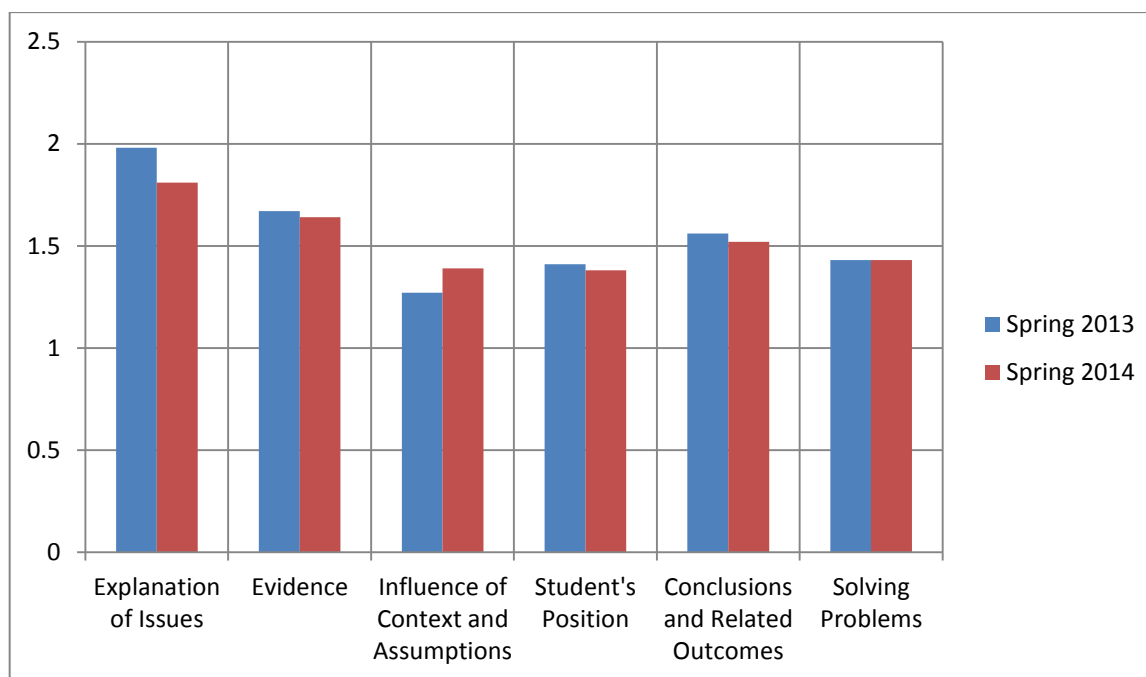


Figure 1. Comparison of Critical Thinking Average Score as a Function of Dimension and Cycle.

### IV. Changes Resulting from Assessment Findings

Assessment findings will be reviewed as a cyclical step of the process and serve as the basis for curriculum and pedagogical changes to support student learning.

#### A. Recommended Curriculum, Instruction, and Governance Changes

The following recommendations are offered to improve curriculum and instruction for the enhancement of student learning in the general education competency areas.

1. Beginning at fall 2013 Convocation, the Vice President for Academic Affairs and Chief Academic Officer will formally charge faculty with the task of beginning a review of their course outlines at their discipline meetings in light of the general education assessment findings. Faculty will be instructed to determine if the correct competencies have been identified for their courses and if their assignments promote student learning for the selected competency (or competencies), based on assessment findings. Faculty will be encouraged to continue the dialogue after the initial meeting to

## General Education Assessment Plan

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ensure that ample consideration is given to this important task. In accordance with the Timeline for Changes to Official Course Outlines (see *Appendix F*), recommended changes to the General Education Core Competencies section must be entered in i-INCURR by a faculty facilitator no later than May 15 for consideration of implementation during the following academic year. To assist faculty with this process, sample assignments have been provided by faculty assessors as appropriate measures for each competency (provided in *Appendix G*).

2. Faculty will review assignments against the appropriate VALUE Rubric to see the types of assignments that are needed to improve student learning.
3. The College will, through a course mapping process, determine how many required courses within a program plan support each general education competency area and identify any existing gaps for needed modifications. While this extensive study will take time, the college does have data on the number of courses that faculty purport are supportive of each competency (see Table 11). Further, the college also has data that identify the core competencies supported through each of its degree programs. Currently, three career/technical associate programs (i.e., Early Childhood Development, Fire Science Technology, and Paralegal Studies) lack Scientific Reasoning as a core competency. However, it's important to note that this competency is likely supported through the required Mathematics or Lab Science elective for Early Childhood majors and the required Lab Science elective for Fire Sciences Technology students. The Paralegal Studies program lacks Scientific Reasoning in any of its required courses or electives. This program will need to develop a means by which to incorporate this competency in its program. Further, there are four transfer programs that indicate a lack of the Cultural and Social Understanding and Scientific Reasoning core competencies. The Science program lacks the Cultural and Social Understanding core competency. However, given that the transfer programs allow for multiple required electives that generally support Cultural and Social Understanding and Scientific Reasoning, there is little doubt that these programs are not supportive of all competencies.

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**Table 11**

*General Education Competency: Supporting Courses*

Competency	Supporting Courses
Written and Oral Communication	1080
Critical Thinking	1171
Cultural and Social Understanding	503
Information Literacy	902
Quantitative Reasoning	596
Scientific Reasoning	471
Personal Development	481

4. The college will encourage faculty to develop and implement standard assignments that align with the appropriate VALUE rubric to promote student learning within these competencies.
5. The college will ensure that faculty most involved in implementing and/or supporting the general education assessment plan, such as faculty assessors and coaches, may use their experience to satisfy components of the faculty evaluation plan.
6. The college will continue to utilize resources of the coaches and to include them as a subcommittee of the Instruction Committee, encouraging a more active and collaborate role and relationship between the two committees during the next academic year.
7. The Instruction Committee will review, edit, and recommend to the Vice President for Academic Affairs and Chief Academic Officer needed changes to the general education assessment process (i.e., rubric editing, standard assignment documents) from the recommendations of the faculty.
8. The Instruction Committee will develop a website for faculty that includes sample assignments for developing general education

# General Education Assessment Plan

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competencies.

## **B. Recommendations from Faculty Discipline Meetings**

In January, 2014, each discipline was asked to examine the general education assessment results (see *Appendix E*) to recommend improvements. The following questions were provided to guide the discussions:

1. In what areas do we need to improve student learning in general education competencies?
2. What strategies might we use to improve student learning in those identified areas?
3. What types of assignments will effectively demonstrate general education competencies by our students in light of the rubrics?
4. How do we need to improve the process of general education assessment?

Disciplines responded that Critical Thinking, Quantitative Reasoning, Written Communication, and Information Literacy competencies need improvement and that the number of NA scores needs to be reduced. Suggested strategies that will be acted on to improve student learning in these areas include:

- Establishing prerequisites
- Aligning course learning outcomes with the rubrics
- Bringing in national experts for workshops on developing higher-level thinking
- Developing assignments that require critical thinking, writing, and research,
- Increasing faculty awareness
- Adjusting competencies on course outlines
- Including baseline data in the study
- Providing discipline and instructor-specific results, reliability, margin of error, comparison of assessment results with GPA, pass/fail status, student type, delivery of instruction, and demographic data

## **C. Implemented Changes**

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The following steps have been implemented to improve the GEA process and student learning as a result of Curriculum Committee and faculty recommendations based on assessment findings:

### **Establishing prerequisites**

- Policy and procedure for Credit Course Requisites, Policy No. 2103, was implemented in March 2012. Since the initial version of the policy was approved, college requisites have been standardized with the VCCS Master Course File requisites and across all college publications. Requisites for over five hundred and fifty courses are currently enforced, and the policy outlines procedures for recommending, approving, and enforcing additional college-specific requisites as needed.

### **Aligning course learning outcomes with the rubrics**

- A preliminary guide aligning course learning outcomes for several MTH courses with the Quantitative Reasoning Rubric is being developed for review by Assessment Coaches with a plan to present a more comprehensive guide to the Curriculum Committee by spring 2015.

### **Brining in national experts and developing assignments**

- Linda Suskie, an internationally recognized assessment and accreditation consultant, lead multiple sessions at the 2014 Learning Institute including workshops focused on creating assignments to develop course learning outcomes and general education competency areas.

### **More on developing assignments**

- The TCC Libraries developed and implemented an Assessment Action Plan to improve student learning in the two Information Literacy competency areas dimensions that received the lowest scores: Evaluation of Information and Its Sources and Use Information Ethically and Legally. The Library Instruction Committee created standard library instruction learning outcomes including evaluation and ethical use of information for ENG 111, ENG 112, and CST 100. Faculty are encouraged to select these learning outcomes for library instruction sessions.

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Additionally, the Library Instruction Committee has created an Effective Teaching Repository including effective pedagogy/andragogy and literacy instruction practices.

- Several disciplines within health professions, natural science, and student development have identified and developed standard assignments aligned with the appropriate VALUE rubric for submission to the GEA.
- Sample assignments identified by faculty assessors as aligning well with VALUE rubrics have been grouped in Appendix G and the Instruction Committee will be charged during 2014-2015 to develop a website to host these and other related materials.

### **Increasing faculty awareness**

- Three Learning Institutes focused on the GEA, and Convocations have included GEA general information sessions. Both the Learning Institutes and Convocations have included GEA faculty assessor training sessions. Going forward, the Learning Institute will continue to devote at least one day to GEA related topics, and assessment coaches will present update sessions each year during Convocation.
- An “Assessments” tab in i-INCURR has been created to provide electronic access to GEA related information. The tab includes links to the General Education Rubrics, contact information for GEA coaches, detailed information on the steps required of faculty of selected students, the electronic tool for scoring student work products, and this document.
- Prior to summer 2014, faculty who instructed the courses included in the upcoming cycle of the GEA received emails providing information regarding course and student selection and faculty expectations. The email directed faculty to the Assessments tab in i-INCURR for more information. Beginning summer 2014, this notification email was sent to all faculty to improve general awareness of the goals and status of and the faculty roles in the initiative.
- Assessment coaches offered group information sessions for faculty of selected students and served as points of contact for faculty who had general questions or need assistance with selecting appropriate assignments.

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## Adjusting competencies on course outlines

- The VP has directed faculty to review the appropriateness of the competencies on course outlines at Convocation disciplines meetings. The Timeline for Changes to Official Course Outlines (see *Appendix F*) specifies the opportunities for faculty facilitators to recommend changes. Recommendations are reviewed, and adjustments made if approved as detailed in the timeline.

## V. Faculty Training and Education

### A. Faculty Assessor Training

At the annual *Learning Institute* in 2012 and 2013, AAC&U representatives provided training to faculty volunteers who were interested in assessing student learning using the TCC adapted AAC&U Value Rubrics. Thirty-five faculty were trained in each session, with 54 total faculty trained during the 2012-13 academic year.

In the future and as in 2012-13, new faculty will be encouraged to participate in training and to become assessors through a nomination process. Faculty who have previously participated as assessors will be invited each October to submit nominations to the Vice President for Academic Affairs and Chief Academic Officer (hereafter referred to as Vice President).

Training will be offered annually.

### B. Faculty Assessment

Assessment of fall competencies will be conducted on the same day of the December commencement ceremony and assessment of spring competencies will be conducted on the same day of the May commencement ceremony.

## VI. Roadmap Project

In August 2010, TCC was one of twelve community colleges selected by AAC&U to take the lead in the “Roadmap Project” initiative funded by MetLife Foundation. The purpose of this initiative is to provide assistance to



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institutions in creating proactive programs of academic support that are tied to expected learning outcomes. TCC sought assistance from AAC&U in developing and implementing its General Education Assessment initiative.

TCC was asked during summer 2013 to continue its participation in the Roadmap Project by serving as a mentor institution to one of the ten newly selected community colleges. Further, because of TCC's previous success as a participant and the fact that Personal Development is one of TCC's general education competency areas, the college is one of thirty institutions that has been invited to design and propose a grant project that will begin to address the following core questions:

- 1) How does learning, as a defining element of our campus culture, support the psychosocial development of our students (how does the epistemic connect to the eudemonic)?
- 2) How and why does an intentional commitment to the psychosocial development of all of our students positively affect their learning and civic engagement?

The college recently received notice that the grant was awarded.

## **VII. Appendices**

## **Appendix A: General Education Core Competencies**

# General Education Assessment Plan

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## GENERAL EDUCATION CORE COMPETENCIES

### TCC/VCCS

Tidewater Community College (TCC) has defined the general education core competencies that all its graduates from associate degree programs should have attained as the following:

1. Communication – A competent communicator can interact with others using all forms of communication, resulting in understanding and being understood. TCC graduates will demonstrate the ability to understand and interpret complex materials; assimilate, organize, develop, and present an idea formally and informally; use standard English; use appropriate verbal and non-verbal responses in interpersonal relations and group discussions; use listening skills; and recognize the role of culture in communication.
2. Critical Thinking – A competent critical thinker evaluates evidence carefully and applies reasoning to decide what to believe and how to act. TCC graduates will demonstrate the ability to discriminate among degrees of credibility, accuracy, and reliability of inferences drawn from given data; recognize parallels, assumptions, or presuppositions in any given source of information; evaluate the strengths and relevance of arguments on a particular question or issue; weigh evidence and decide if generalizations or conclusions based on the given data are warranted; determine whether certain conclusions or consequences are supported by the information provided; and use problem solving skills.
3. Cultural and Social Understanding – A culturally and socially competent person possesses an awareness, understanding, and appreciation of the interconnectedness of the social and cultural dimensions within and across local, regional, state, national, and global communities. TCC graduates will demonstrate the ability to assess the impact that social institutions have on individuals and culture—past, present, and future; describe their own as well as others' personal ethical systems and values within social institutions; recognize the impact that arts and humanities have upon individuals and cultures; recognize the role of language in social and cultural contexts; and recognize the interdependence of distinctive world-wide social, economic, geo-political, and cultural systems.
4. Information Literacy – A person who is competent in information literacy recognizes when information is needed and has the ability to locate, evaluate, and use it effectively. TCC graduates will demonstrate the ability to determine

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- the nature and extent of information needed; access needed information effectively and efficiently; evaluate information and its sources critically and incorporate selected information into his or her knowledge base; use information effectively, individually or as a member of a group, to accomplish a specific purpose; and understand many of the economic, legal, and social issues surrounding the use of information and access and use information ethically and legally.
5. Personal Development – An individual engaged in personal development strives for physical well-being and emotional maturity. TCC graduates will demonstrate the ability to develop and/or refine personal wellness goals; and develop and/or enhance the knowledge, skills and understanding to make informed academic, social personal, career, and interpersonal decisions.
  6. Quantitative Reasoning – A person who is competent in quantitative reasoning possesses the skills and knowledge necessary to apply the use of logic, numbers, and mathematics to deal effectively with common problems and issues. A person who is quantitatively literate can use numerical, geometric, and measurement data and concepts, mathematical skills, and principles of mathematical reasoning to draw logical conclusions and to make well-reasoned decisions. TCC graduates will demonstrate the ability to use logical and mathematical reasoning with the context of various disciplines; interpret and use mathematical formulas; interpret mathematical models such as graphs, tables and schematics and draw inferences from them; use graphical, symbolic, and numerical methods to analyze, organize, and interpret data; estimate and consider answers to mathematical problems in order to determine reasonableness; and represent mathematical information numerically, symbolically, and visually using graphs and charts.
  7. Scientific Reasoning – A person who is competent in scientific reasoning adheres to a self-correcting system of inquiry (the scientific method) and relies on empirical evidence to describe, understand, predict, and control natural phenomena. TCC graduates will demonstrate the ability to generate an empirically evidenced and logical argument; distinguish a scientific argument from a non-scientific argument; reason by deduction, induction and analogy; distinguish between causal and correlational relationships; and recognize methods of inquiry that lead to scientific knowledge.

### **Appendix B: General Education Degree Requirements**

# General Education Assessment Plan

**Table 5-1A**  
**VCCS Degree Requirements**

Area	Distribution						
<p><b>GENERAL EDUCATION</b></p> <p>General education is that portion of the collegiate experience that addresses the knowledge, skills, attitudes, and values characteristic of educated persons. It is unbounded by disciplines and honors the connections among bodies of knowledge. The associate degree programs within the VCCS support a collegiate experience that focuses on seven goal areas: <i>communication; critical thinking; cultural and social understanding; information literacy; personal development; quantitative reasoning; scientific reasoning.</i>) The general education goal areas outlined below are to be introduced in the foundational courses and enhanced in program and elective courses. (NOTE: Some of the categories include two goal areas when a single course may provide foundations in both goal areas.)</p> <table border="1" data-bbox="103 640 1159 1287"> <tr> <td data-bbox="103 640 586 856"> <p>I. Foundations In Communication: Courses designed to enable students to interact with others using all forms of communication, resulting in understanding and being understood.</p> </td><td data-bbox="586 640 1159 856"> <p>II. Foundations In Critical Thinking And Information Literacy: Courses designed to enable students to evaluate evidence carefully and apply reasoning to decide what to believe and how to act, and to recognize when information is needed and have the ability to locate, evaluate, and use it effectively.</p> </td></tr> <tr> <td data-bbox="103 856 586 1108"> <p>III. Foundations In Cultural And Social Understanding: Courses designed to enable students to have an awareness, understanding, and appreciation of the interconnectedness of the social and cultural dimensions within and across local, regional, state, national, and global communities.</p> </td><td data-bbox="586 856 1159 1108"> <p>IV. Foundations In Personal Development: Courses designed to enable students to strive for physical well-being and emotional maturity.</p> </td></tr> <tr> <td colspan="2" data-bbox="103 1108 1159 1287"> <p>V. Foundations In Quantitative And Scientific Reasoning: Courses designed to enable students to possess the skills and knowledge necessary to apply the use of logic, numbers, and mathematics to deal effectively with common problems and issues, and to adhere to a self-correcting system of inquiry (the scientific method) and rely on empirical evidence to describe, understand, predict, and control natural phenomena.</p> </td></tr> </table>	<p>I. Foundations In Communication: Courses designed to enable students to interact with others using all forms of communication, resulting in understanding and being understood.</p>	<p>II. Foundations In Critical Thinking And Information Literacy: Courses designed to enable students to evaluate evidence carefully and apply reasoning to decide what to believe and how to act, and to recognize when information is needed and have the ability to locate, evaluate, and use it effectively.</p>	<p>III. Foundations In Cultural And Social Understanding: Courses designed to enable students to have an awareness, understanding, and appreciation of the interconnectedness of the social and cultural dimensions within and across local, regional, state, national, and global communities.</p>	<p>IV. Foundations In Personal Development: Courses designed to enable students to strive for physical well-being and emotional maturity.</p>	<p>V. Foundations In Quantitative And Scientific Reasoning: Courses designed to enable students to possess the skills and knowledge necessary to apply the use of logic, numbers, and mathematics to deal effectively with common problems and issues, and to adhere to a self-correcting system of inquiry (the scientific method) and rely on empirical evidence to describe, understand, predict, and control natural phenomena.</p>		<p><b>Minimum 15 credits</b></p> <p><b>(Students must take at least one course in each of the five areas listed, to total at least 15 credits.)</b></p>
<p>I. Foundations In Communication: Courses designed to enable students to interact with others using all forms of communication, resulting in understanding and being understood.</p>	<p>II. Foundations In Critical Thinking And Information Literacy: Courses designed to enable students to evaluate evidence carefully and apply reasoning to decide what to believe and how to act, and to recognize when information is needed and have the ability to locate, evaluate, and use it effectively.</p>						
<p>III. Foundations In Cultural And Social Understanding: Courses designed to enable students to have an awareness, understanding, and appreciation of the interconnectedness of the social and cultural dimensions within and across local, regional, state, national, and global communities.</p>	<p>IV. Foundations In Personal Development: Courses designed to enable students to strive for physical well-being and emotional maturity.</p>						
<p>V. Foundations In Quantitative And Scientific Reasoning: Courses designed to enable students to possess the skills and knowledge necessary to apply the use of logic, numbers, and mathematics to deal effectively with common problems and issues, and to adhere to a self-correcting system of inquiry (the scientific method) and rely on empirical evidence to describe, understand, predict, and control natural phenomena.</p>							
<p><b>PROGRAM REQUIREMENTS Major</b></p> <p>Field Core</p>	<p>Minimum 15 credits*</p>						
<p>Related/Specialization Courses</p> <p>Electives</p>	<p>Maximum 15 credits</p> <p>0-15 credits</p> <p><b>AA/AS/AA&amp;S:</b></p> <p><b>60-63 credits**</b></p>						
<p><b>TOTALS</b></p>	<p><b>AAA/AAS:</b></p> <p><b>65-69 credits***</b></p>						

\*Language in Section 5.1.0.0.1 of the VCCS Policy Manual states 25% of the courses in the degree program (15-18 credits) must be common across majors within a degree. The shared courses must be major or related/specialization courses.

\*\*Credit range for engineering programs is 60-72 semester hour credits.

\*\*\*Credit range for AAA/AAS programs is 65-69, including nursing. For other programs in the Health Technologies, the range is 65-72 semester hour credits.

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**Table 5-1B Minimum Requirements for Associate Degrees in the VCCS**

General Education:	Minimum Number of Semester Hour Credits			
	(1) <u>AA</u>	(2) <u>AS</u>	(3) <u>AA&amp;S</u>	(4) <u>AAA</u> <u>/ AAS</u>
Communication <sup>(a)</sup>	6	6	6	3
Humanities / Fine Arts	6	6	6	3
Foreign Language (Intermediate Level)	6	0	0	0
Social / Behavioral Sciences	9	9 <sup>(b)</sup>	9	3 <sup>(c)</sup>
Natural Sciences /	7	7	7	0
Mathematics	6	6 <sup>(d)</sup>	6 <sup>(d)</sup>	0 } 3 <sup>(c)</sup>
Personal Development <sup>(e)</sup>	2	2	2	2
Other Requirements for Associate Degrees:				
Major field courses and electives (columns 1-3)	18-21	24-27	24-27	49-53 <sup>(f)</sup>
Career/technical courses (column 4)	_____			_____
Total for Degree <sup>(g)</sup> =	60-63	60-63 <sup>(h)</sup>	60-63 <sup>(h)</sup>	65-69 <sup>(h)</sup>

Notes: The VCCS Policy Manual, Section 2-IV-C, defines general education within the VCCS. Sections 2.7.3, 3.4.10, and 3.5.1 of the Southern Association of Colleges and Schools (SACS) Principles of Accreditation specify general education requirements. Colleges must address all SACS requirements, the SCHEV Core Competencies, and the general education goal areas listed in this VCCS Policy Manual.

- (a) Must include at least one course in English composition.
- (b) Only 6 semester hours of social/behavioral sciences are required for engineering majors who plan to transfer to a baccalaureate degree engineering program that requires 6 or fewer hours in this category, provided that the college/university publishes such requirements in its transfer guide.
- (c) While general education courses other than those designed for transfer may be used to meet portions of these requirements, SACS principles require that general education courses be general in nature and must not "...narrowly focus on those skills, techniques, and procedures peculiar to a particular occupation or profession."
- (d) Only 3 semester hours of mathematics are required for the General Studies major.
- (e) Personal development includes health, physical education, or recreation courses that promote physical and emotional well being and student development courses. Must include at least one student development course.
- (f) AAA/AAS degrees must contain a minimum of 15 semester hours of general education. Students should plan to take at least 30 hours in the major; the remaining hours will be appropriate to the major.
- (g) All college-level course prerequisites must be included in the total credits required for each program.
- (h) Credit range for engineering programs is 60-72 semester hour credits. Credit range for AAA/AAS programs is 65-69, including nursing. For other programs in the Health Technologies, the range is 65-72 semester hour credits.



## **Appendix C: Courses Selected for Assessment**

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## Courses Selected for Assessment by Learning Outcome and Cycle

### Written Communication

#### Fall 2012 (Pilot)

BIO 142 Human Anatomy and Physiology II

ENG 241 Survey of American Literature I

HIS 122 United States History II

DMS 212 Obstetrical and Gynecological Sonography

PSY 235 Child Psychology

#### Fall 2014

ACQ 221 Advanced Acquisition and Procurement Management I

MKT 170 Customer Service

NAS 131 Astronomy I

OCT 100 Introduction to Occupational Therapy

RAD 142 Principles of Radiographic Quality II

REL 230 Religions of the World

### Information Literacy

#### Fall 2012 (Pilot)

ART 286 Communication Arts Workshop

ART 287 Portfolio and Resume Preparation

BIO 142 Human Anatomy and Physiology II

ECO 201 Principles of Macroeconomics

ENG 241 Survey of American Literature I

HIS 122 United States History II

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NUR 255 Nursing Organization and Management

## **Fall 2014**

IDS 245 Computer-Aided Drafting for Interior Designers

ITE 119 Information Literacy

MDL 225 Clinical Hematology II

MKT 100 Principles of Marketing

SOC 201 Introduction to Sociology I

## **Critical Thinking**

### **Spring 2013 (Pilot)**

ENG 210 Advanced Composition

GOL 112 Oceanography II

HIS 112 History of World Civilization II

ITN 260 Network Security Basics

### **Spring 2014**

ADJ 201 Criminology

DMS 207 Sectional Anatomy

EMS 111 Emergency Medical Technician - Basic

ENG 112 College Composition II

HIM 230 Information Systems and Technology in Health Care

HIS 142 African American History II

RTH 290 Coordinated Internship in Respiratory Therapy

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## **Quantitative Reasoning**

### **Spring 2013 (Pilot)**

ACC 212 Principles of Accounting II

CHM 112 College Chemistry II

EGR 245 Engineering Mechanics - Dynamics

MTH 157 Elementary Statistics

MTH 270 Applied Calculus

RAD 205 Radiation Protection and Radiobiology

## **Scientific Reasoning**

### **Spring 2013 (Pilot)**

ADJ 234 Terrorism and Counter-Terrorism

ARC 133 Construction Methodology and Procedures I

BIO 102 General Biology II

EMS 211 Operations

PSY 255 Psychological Aspects of Criminal Behavior

## **Oral Communication**

### **Fall 2013 (Pilot)**

CST 100 Principles of Public Speaking

## **Cultural and Social Understanding**

### **Fall 2013 (Pilot)**

EMS 201 EMS Professional Development

## General Education Assessment Plan

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GEO 210 People and the Land: Introduction to Cultural Geography

HUM 260 Survey of Twentieth-Century Culture

PHI 226 Social Ethics

PTH 210 Psychological Aspects of Therapy

SSC 210 Introduction to Women's Studies

### **Personal Development**

#### **Spring 2014 (Pilot)**

CST 126 Interpersonal Communication

HLT 116 Introduction to Personal Wellness Concepts

HTL 215 Personal Stress and Stress Management

SDV 100 College Success Skills

SDV 108 College Survival Skills

## **Appendix D: VALUE Rubrics**



## WRITTEN COMMUNICATION RUBRIC

### DEFINITION

Written communication is the development and expression of ideas in writing resulting in understanding and being understood. 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. A competent written communicator demonstrates the ability to: understand and interpret complex materials; assimilate, organize, develop, and present an idea formally and informally; use standard English; and recognizes the role of culture in communication.

### FRAMING LANGUAGE

This rubric focuses assessment on how specific written work samples or collections of work respond to specific contexts. The central question guiding the rubric is "How well does writing respond to the needs of audience(s) for the work?" In focusing on this question the rubric does not attend to other aspects of writing that are equally important: issues of writing process, writing strategies, writers' fluency with different modes of textual production or publication, or writer's growing engagement with writing and disciplinarity through the process of writing.

Evaluators using this rubric must have information about the assignments or purposes for writing guiding writers' work. Also recommended is including reflective work samples or collections of work that address such questions as: What decisions did the writer make about audience, purpose, and genre as s/he compiled the

work in the portfolio? How are those choices evident in the writing – in the content, organization and structure, reasoning, evidence, mechanical and surface conventions, and citational systems used in the writing? This will enable evaluators to have a clear sense of how writers understand the assignments and take it into consideration as they evaluate.

The first section of this rubric addresses the context and purpose for writing. A work sample or collections of work can convey the context and purpose for the writing tasks it showcases by including the writing assignments associated with work samples. But writers may also convey the context and purpose for their writing within the texts. It is important for faculty and institutions to include directions for students about how they should represent their writing contexts and purposes.

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## WRITTEN COMMUNICATION RUBRIC

### GLOSSARY

The definitions that follow were developed to clarify terms and concepts used in this rubric only.

- **Content Development:** The ways in which the text explores and represents its topic in relation to its audience and purpose.
- **Context of and purpose for writing:** The context of writing is the situation surrounding a text: who is reading it? who is writing it? Under what circumstances will the text be shared or circulated? What social or political factors might affect how the text is composed or interpreted? The purpose for writing is the writer's intended effect on an audience. Writers might want to persuade or inform; they might want to report or summarize information; they might want to work through complexity or confusion; they might want to argue with other writers, or connect with other writers; they might want to convey urgency or amuse; they might write for themselves or for an assignment or to remember.
- **Disciplinary conventions:** Formal and informal rules that constitute what is seen generally as appropriate within different academic fields, e.g. introductory strategies, use of passive voice or first person point of view, expectations for thesis or hypothesis, expectations for kinds of evidence and support that are appropriate to the task at hand, use of primary and secondary sources to provide

evidence and support arguments and to document critical perspectives on the topic. Writers will incorporate sources according to disciplinary and genre conventions, according to the writer's purpose for the text. Through increasingly sophisticated use of sources, writers develop an ability to differentiate between their own ideas and the ideas of others, credit and build upon work already accomplished in the field or issue they are addressing, and provide meaningful examples to readers.

- **Evidence:** Source material that is used to extend, in purposeful ways, writers' ideas in a text.
- **Genre conventions:** Formal and informal rules for particular kinds of texts and/or media that guide formatting, organization, and stylistic choices, e.g. lab reports, academic papers, poetry, webpages, or personal essays.
- **Sources:** Texts (written, oral, behavioral, visual, or other) that writers draw on as they work for a variety of purposes -- to extend, argue with, develop, define, or shape their ideas, for example.



# General Education Assessment Plan

## WRITTEN COMMUNICATION RUBRIC

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

	Capstone 4	3	Milestones 2	Benchmark 1
<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 that is responsive to the assigned task(s) and focuses all elements of the work.	Demonstrates adequate consideration of context, audience, and purpose 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 task(s) (e.g., begins to show awareness of audience's perceptions and assumptions).	Demonstrates minimal attention to context, audience, purpose, and to the assigned task(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 discipline and genre of the writing.	Demonstrates consistent use of credible, relevant sources to support ideas that are situated within the discipline and genre of the writing.	Demonstrates an attempt to use credible and/or relevant sources to support ideas that are appropriate for the discipline and genre of the writing.	Demonstrates an attempt to use sources to support ideas in the writing.
<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.



## INFORMATION LITERACY RUBRIC

### DEFINITION

The ability to know when there is a need for information, to be able to identify, locate, evaluate, and effectively and responsibly use and share that information for the problem at hand (Adopted from the National Forum on Information Literacy). A person who is competent in information literacy demonstrates the ability to: determine the nature and extent of

the information needed; access needed information effectively and efficiently; evaluate information and its sources critically and incorporate selected information into his or her knowledge base; and understand many of the economic, legal, and social issues surrounding the use of information and use information ethically and legally.

### FRAMING LANGUAGE

This rubric is recommended for use evaluating a collection of work, rather than a single work sample in order to fully gauge students' information skills. Ideally, a collection of work would contain a wide variety of different types of work and might include: research papers, editorials, speeches, grant proposals, marketing or business plans, PowerPoint presentations, posters, literature reviews, position papers, and argument critiques to name a few. In addition, a description of

the assignments with the instructions that initiated the student work would be vital in providing the complete context for the work. Although a student's final work must stand on its own, evidence of a student's research and information gathering processes, such as a research journal/diary, could provide further demonstration of a student's information proficiency and for some criteria on this rubric would be required.

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# General Education Assessment Plan

INFORMATION LITERACY RUBRIC				
	Capstone 4	Milestones 3                      2		Benchmark 1
Determine the nature and extent of information needed.	Effectively defines the scope of the research question or thesis. Effectively determines key concepts. All types of information (sources) selected directly relate to concepts or answer research question.	Defines the scope of the research question, thesis or problem completely. Can determine key concepts. Most types of information (sources) selected relate to concepts or answer research question.	Defines the scope of the question, thesis or problem incompletely (parts are missing, remains too broad or too narrow, etc.). Can determine key concepts. Types of information (sources) selected partially relate to concepts or answer research question.	Has difficulty defining the scope of the question, thesis or problem. Has difficulty determining key concepts. Types of information (sources) selected do not relate to concepts or answer research question.
Access the needed information effectively and efficiently.	Accesses information using effective, well-designed search strategies and most appropriate information sources.	Accesses information using variety of search strategies and refined information sources. Demonstrates ability to refine search.	Accesses information using simple search strategies, retrieves relevant information from limited and similar sources.	Accesses information randomly, retrieves information that lacks relevance and quality.
Evaluate information and its sources critically and incorporate selected information into his or her knowledge base	Systematically and methodically analyzes own and others' assumptions and carefully evaluates the relevance of contexts when presenting a position.	Identifies own and others' assumptions and several relevant contexts when presenting a position.	Questions some assumptions. Identifies several relevant contexts when presenting a position. May be more aware of others' assumptions than one's own (or vice versa).	Has difficulty distinguishing between an assertion and an assumption. Begins to identify some contexts when presenting a position.
Use information effectively, individually or as a member of a group to accomplish a specific purpose.	Communicates, organizes and synthesizes information from sources to fully achieve a specific purpose, with clarity and depth.	Communicates, organizes and synthesizes information from sources. Intended purpose is achieved.	Communicates and organizes information from sources (accurately quoted, used in context, correctly paraphrased, etc.). The information is not completely synthesized, so the intended purpose is not fully achieved.	Communicates information from sources. The information is fragmented and/or used inappropriately (misquoted, taken out of context, incorrectly paraphrased, etc.), so the intended purpose is not achieved.
Applies many of the economic, legal and social issues surrounding the use of information and access and use information ethically and legally.	Students use correctly all of the following information use strategies: • use of citations and references • choice of paraphrasing, summary, or quoting • using information in ways that are true to original context • distinguishing between common knowledge and ideas requiring attribution Demonstrates an understanding of the ethical, economic, legal and social issues on the use of published, confidential, and/or proprietary information.	Students use correctly three of the following information use strategies: • use of citations and references • choice of paraphrasing, summary, or quoting • using information in ways that are true to original context • distinguishing between common knowledge and ideas requiring attribution Demonstrates an understanding of the ethical, economic, legal and social issues on the use of published, confidential, and/or proprietary information.	Students use correctly two of the following information use strategies: • use of citations and references • choice of paraphrasing, summary, or quoting • using information in ways that are true to original context • distinguishing between common knowledge and ideas requiring attribution Demonstrates an understanding of the ethical, economic, legal and social issues on the use of published, confidential, and/or proprietary information.	Students use correctly one of the following information use strategies: • use of citations and references • choice of paraphrasing, summary, or quoting • using information in ways that are true to original context • distinguishing between common knowledge and ideas requiring attribution Demonstrates an understanding of the ethical, economic, legal and social issues on the use of published, confidential, and/or proprietary information.



## CRITICAL THINKING RUBRIC

### DEFINITION

Critical thinking is a habit of mind characterized by the comprehensive exploration of issues, ideas, artifacts, and events before accepting or formulating an opinion or conclusion. A person who is competent in critical thinking evaluates evidence carefully and applies reasoning to decide what to believe and how to act. A person with competency in this area demonstrates the ability to demonstrate among degrees of credibility, accuracy, and reliability of inferences drawn from

given data; recognizes parallels, assumptions, or presuppositions in any given source of information; evaluates the strengths and relevance of arguments on a particular question or issue; weighs evidence and decides if generalizations or conclusions based on the given data are warranted; determines whether certain conclusions or consequences are supported by the information provided; and uses problem solving skills.

### FRAMING LANGUAGE

This rubric is designed to be transdisciplinary, reflecting the recognition that success in all disciplines requires habits of inquiry and analysis that share common attributes. Further, research suggests that successful critical thinkers from all disciplines increasingly need to be able to apply those habits in various and changing situations encountered in all walks of life.

This rubric is designed for use with many different types of assignments and the suggestions here are not

an exhaustive list of possibilities. Critical thinking can be demonstrated in assignments that require students to complete analyses of text, data, or issues. Assignments that cut across presentation mode might be especially useful in some fields. If insight into the process components of critical thinking (e.g., how information sources were evaluated regardless of whether they were included in the product) is important, assignments focused on student reflection might be especially illuminating.

### GLOSSARY

The definitions that follow were developed to clarify terms and concepts used in this rubric only.

- **Ambiguity:** Information that may be interpreted in more than one way.
- **Assumptions:** Ideas, conditions, or beliefs (often implicit or unstated) that are "taken for granted or accepted as true without proof." (quoted from [www.dictionary.reference.com/browse/assumptions](http://www.dictionary.reference.com/browse/assumptions))
- **Context:** The historical, ethical, political, cultural, environmental, or circumstantial settings or conditions

that influence and complicate the consideration of any issues, ideas, artifacts, and events.

- **Literal meaning:** Interpretation of information exactly as stated. For example, "she was green with envy" would be interpreted to mean that her skin was green.
- **Metaphor:** Information that is (intended to be) interpreted in a non-literal way. For example, "she was green with envy" is intended to convey an intensity of emotion, not a skin color.

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# General Education Assessment Plan

## CRITICAL THINKING VALUE RUBRIC

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

	Capstone 4	3	Milestones 2	Benchmark 1
<b>Explanation of issues</b>	Issue/problem to be considered critically is stated clearly and described comprehensively, delivering all relevant information necessary for full understanding.	Issue/problem to be considered critically is stated, described, and clarified so that understanding is not seriously impeded by omissions.	Issue/problem to be considered critically is stated but description leaves some terms undefined, ambiguities unexplored, boundaries undetermined, and/or backgrounds unknown.	Issue/problem to be considered critically is stated without clarification or description.
<b>Evidence</b> Selecting and using information to investigate a point of view or conclusion	Information is taken from source(s) with enough interpretation/evaluation to develop a comprehensive analysis or synthesis. Viewpoints of experts are questioned thoroughly.	Information is taken from source(s) with enough interpretation/evaluation to develop a coherent analysis or synthesis. Viewpoints of experts are subject to questioning.	Information is taken from source(s) with some interpretation/evaluation, but not enough to develop a coherent analysis or synthesis. Viewpoints of experts are taken as mostly fact, with little questioning.	Information is taken from source(s) without any interpretation/evaluation. Viewpoints of experts are taken as fact, without question.
<b>Influence of context and assumptions</b>	Thoroughly (systematically and methodically) analyzes own and others' assumptions and carefully evaluates the relevance of contexts when presenting a position.	Differentiates between self and others' assumptions and several relevant contexts when presenting a position.	Questions some assumptions. Identifies several relevant contexts when presenting a position. May be more aware of others' assumptions than one's own (or vice versa).	Shows an emerging awareness of present assumptions (sometimes labels assertions as assumptions). Begins to identify some contexts when presenting a position.
<b>Student's position (perspective, thesis/hypothesis)</b>	Specific position (perspective, thesis/hypothesis) is creative, taking into account the complexities of an issue. Limits of position (perspective, thesis/hypothesis) are acknowledged. Others' points of view are synthesized within position (perspective, thesis/hypothesis).	Specific position (perspective, thesis/hypothesis) takes into account the complexities of an issue. Others' points of view are acknowledged within position (perspective, thesis/hypothesis).	Specific position (perspective, thesis/hypothesis) acknowledges different sides of an issue.	Specific position (perspective, thesis/hypothesis) is stated, but is simplistic and obvious.
<b>Conclusions and related outcomes (implications and consequences)</b>	Conclusions and related outcomes (consequences and implications) are logical and well supported; reflect student's informed evaluation, demonstrating ability to weigh evidence and place perspectives discussed in priority order.	Conclusion is logically tied to a range of information, including opposing viewpoints; related outcomes (consequences and implications) are identified clearly; evidence is generally well supported.	Conclusion is logically tied to information (because information is chosen to fit the desired conclusion); some related outcomes (consequences and implications) are identified clearly; support of evidence is limited.	Conclusion is inconsistently tied to some of the information discussed; related outcomes (consequences and implications) are oversimplified; little to no support of evidence.
<b>Solving Problems</b>	Not only develops a logical, consistent plan to solve a problem, but recognizes consequences of a solution and can articulate reasons for choosing a solution.	Having selected from among several approaches, develops a logical, consistent plan that considers how to solve a problem.	Considers and rejects less acceptable approaches to solving a problem.	Only a single approach is considered and is used to solve a problem.



## QUANTITATIVE REASONING RUBRIC

### DEFINITION

Quantitative Reasoning (QR) is a “habit of mind,” competency, and comfort in working with numerical data. Individuals with strong QR skills possess the ability to reason and solve quantitative problems from a wide array of authentic contexts and everyday life situations. They understand and can create sophisticated arguments supported by quantitative evidence and they can clearly communicate those arguments in a variety of formats (using words, tables, graphs, mathematical equations, etc., as appropriate). A person who is competent in quantitative reasoning can use numerical, geometric, and measurement data and concepts,

mathematical skills, and principles of mathematical reasoning to draw logical conclusions and to make well-reasoned decisions; the person demonstrates the ability to: use logical and mathematical reasoning within the context of various disciplines; interpret and use mathematical formulas; interpret mathematical models and draw inferences from them; use graphical, symbolic, and numerical methods to analyze, organize, and interpret data; and, estimate and consider answers to mathematical problems in order to determine reasonableness.

### FRAMING LANGUAGE

This rubric has been designed for the evaluation of work that addresses quantitative reasoning in a substantive way. QR is not just computation, not just the citing of someone else’s data. QR is a habit of mind, a way of thinking about the world that relies on data and on the mathematical analysis of data to make connections and draw conclusions. Teaching QR requires us to design assignments that address authentic, data-based problems. Such assignments may call for the traditional written paper, but we can imagine other alternatives: a video of a PowerPoint presentation, perhaps, or a well designed series of web pages. In any case, a successful demonstration of QR will place the mathematical work in the context of a full and robust discussion of the underlying issues addressed by the assignment.

Finally, QR skills can be applied to a wide array of problems of varying difficulty, confounding the use of this rubric. For example, the same student might demonstrate high levels of QR achievement when working on a simplistic problem and low levels of QR achievement when working on a very complex problem. Thus, to accurately assess a student’s QR achievement it may be necessary to measure QR achievement within the context of problem complexity, much as is done in diving competitions where two scores are given, one for the difficulty of the dive, and the other for the skill in accomplishing the dive. In this context, that would mean giving one score for the complexity of the problem and another score for the QR achievement in solving the problem.

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**QUANTITATIVE REASONING VALUE RUBRIC**  
(For more information, please contact [valued@uacsu.org](mailto:valued@uacsu.org))

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

	Capstone 4	3	Milestones 2	Benchmark 1
<b>Interpretation</b> Ability to explain information presented in mathematical forms (e.g., equations, graphs, diagrams, tables, words)	Provides accurate explanations of information presented in mathematical forms. Makes appropriate inferences based on that information. For example, accurately explains the trend data shown in a graph and makes reasonable predictions regarding what the data suggest about future trends.	Provides accurate explanations of information presented in mathematical forms. For instance, accurately explains the trend data shown in a graph.	Provides somewhat accurate explanations of information presented in mathematical forms, but occasionally makes minor errors related to computations or units. For instance, accurately explains trend data shown in a graph, but may miscalculate the slope of the trend line.	Attempts to explain information presented in mathematical forms, but draws incorrect conclusions about what the information means. For example, attempts to explain the trend data shown in a graph, but will frequently misinterpret the nature of that trend, perhaps by confusing positive and negative trends.
<b>Representation</b> Ability to convert relevant information into various mathematical forms (e.g., equations, graphs, diagrams, tables, words)	Skillfully converts relevant information into an insightful mathematical portrayal in a way that contributes to a further or deeper understanding.	Competently converts relevant information into an appropriate and defined mathematical portrayal.	Completes conversion of information but resulting mathematical portrayal is only partially appropriate or accurate.	Completes conversion of information but resulting mathematical portrayal is inappropriate or inaccurate.
<b>Calculation</b>	Calculations attempted are essentially all successful and sufficiently comprehensive to solve the problem. Calculations are also presented elegantly (clearly, concisely, etc.)	Calculations attempted are essentially all successful and sufficiently comprehensive to solve the problem.	Calculations attempted are either unsuccessful or represent only a portion of the calculations required to comprehensively solve the problem.	Calculations are attempted but are both unsuccessful and are not comprehensive.
<b>Application / Analysis</b> Ability to make judgments and draw appropriate conclusions based on the quantitative analysis of data, while recognizing the limits of this analysis.	Uses the quantitative analysis of data as the basis for deep and thoughtful and logical judgments, drawing insightful, carefully qualified conclusions from this work.	Uses the quantitative analysis of data as the basis for logical judgments, drawing reasonable and appropriately qualified conclusions from this work.	Uses the quantitative analysis of data as the basis for workmanlike (without inspiration or nuance, ordinary) judgments, drawing plausible conclusions from this work.	Uses the quantitative analysis of data as the basis for tentative, basic judgments, although is hesitant or uncertain about drawing conclusions from this work.
<b>Assumptions</b> Ability to make and evaluate important assumptions in estimation, modeling, and data analysis.	Explicitly describes assumptions and provides compelling rationale for why each assumption is appropriate. 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.
<b>Communication</b> Expressing 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)	Uses quantitative information in connection with the argument or purpose of the work, presents it in an effective format, and explicates it 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 than completely effective format or some parts of the explanation may be uneven.	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 does not provide adequate explicit numerical support. (May use quasi-quantitative words such as "many," "few," "increase in," "small," and the like in place of actual quantities.)



## SCIENTIFIC REASONING RUBRIC

### DEFINITION

Scientific Reasoning is an adherence to a self-correcting system of inquiry and a reliance on empirical evidence to describe, understand, predict, and control natural phenomena.

### FRAMING LANGUAGE

This rubric has been designed for the evaluation of work that addresses scientific reasoning in a substantive way. A person who is competent in scientific reasoning will demonstrate the ability to: generate an empirically evidenced and logical argument; distinguish a scientific

argument from a non-scientific argument; reason by deduction, induction, and analogy; distinguish between causal and correlational relationships; and recognize methods of inquiry that lead to scientific knowledge.

### GLOSSARY

The definitions that follow were developed to clarify terms and concepts used in this rubric only.

- **Conclusions:** A synthesis of key findings drawn from research/evidence.
- **Limitations:** Critique of the process or evidence.
- **Implications:** How inquiry results apply to a larger context or the real world.
- **Empirical:** Originating in or based on observation or experience.
- **Deduction:** Deriving of a conclusion by reasoning.
- **Induction:** Inference of a generalized conclusion from particular instances.
- **Analogy:** Resemblance in some particulars between things otherwise unlike.
- **Causal:** Expressing or indicating cause.
- **Correlation:** A relation existing between phenomena or things or between or between mathematical or statistical variables which tend to vary, be associated, or occur together in a way not expected on the basis of chance alone.

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# General Education Assessment Plan

## SCIENTIFIC REASONING VALUE RUBRIC

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

	Capstone 4	3	Milestones 2	Benchmark 1
<b>Argument or Topic selection:</b> Generating an empirically evidenced and logical argument	Identifies a creative, focused, and manageable argument or topic that addresses potentially significant yet previously less-explored aspects.	Identifies a focused and manageable/ doable argument or topic that appropriately addresses relevant aspects.	Identifies an argument or topic that while manageable/ doable, is too narrowly focused and leaves out relevant aspects.	Identifies an argument or topic that is far too general and wide-ranging as to be manageable and doable.
<b>Existing Knowledge, Research, and/or Views:</b> Distinguishing a scientific argument from a non-scientific argument	Synthesizes in-depth information from credible and relevant sources representing various points of view/ approaches.	Presents in-depth information from credible and relevant sources representing various points of view/ approaches.	Presents information from credible and relevant sources representing limited points of view/approaches.	Presents information from non-credible and irrelevant sources representing limited points of view/ approaches.
<b>Methodology:</b> Recognizing methods of inquiry that lead to scientific knowledge	All elements of the methodology or theoretical framework are skillfully developed. Appropriate methodology or theoretical frameworks may be synthesized from across disciplines or from relevant subdisciplines.	Critical elements of the methodology or theoretical framework are appropriately developed, however, more subtle elements are ignored or unaccounted for.	Critical elements of the methodology or theoretical framework are missing, incorrectly developed, or unfocused.	Inquiry demonstrates a misunderstanding of the methodology or theoretical framework.
<b>Analysis:</b> Reasoning by deduction, induction, and analogy	Organizes and synthesizes evidence to reveal insightful patterns, differences, or similarities related to focus. Demonstrates elegant ability to reason by deduction, induction, and analogy.	Organizes evidence to reveal important patterns, differences, or similarities related to focus. Demonstrates appropriate ability to reason by deduction, induction, and analogy.	Organizes evidence, but the organization is not effective in revealing important patterns, differences, or similarities. Demonstrates limited ability to reason by deduction, induction, and analogy.	Lists evidence, but it is not organized and/or is unrelated to focus. Demonstrates no ability to reason by deduction, induction, and analogy.
<b>Conclusions, Limitations and Implications:</b> Distinguishing between causal and correlational relationships	States a conclusion that is a logical extrapolation from the inquiry findings limitations and implications. Demonstrates advanced ability to distinguish between causal and correlational relationships.	States a conclusion focused solely on the inquiry findings. The conclusion arises specifically from and responds specifically to the inquiry findings limitations and implications. Demonstrates appropriate ability to distinguish between causal and correlational relationships.	States a general conclusion that, because it is so general, also applies beyond the scope of the inquiry findings limitations and implications. Demonstrates limited ability to distinguish between causal and correlational relationships.	States an ambiguous, illogical, or unsupportable conclusion from inquiry findings limitations and implications. Demonstrates no ability to distinguish between causal and correlational relationships.

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## ORAL COMMUNICATION RUBRIC

*The type of oral communication most likely to be included in a collection of student work is an oral presentation and therefore is the focus for the application of this rubric.*

### DEFINITION

A person competent in oral communication demonstrates the ability to understand and interpret complex materials; assimilate, organize, develop, and present an idea formally and informally; use standard

English; use appropriate verbal and non-verbal responses in interpersonal relations and group discussions; use listening skills; and recognize the role of culture in communication.

### FRAMING LANGUAGE

Oral communication takes many forms. This rubric is specifically designed to evaluate oral presentations of a single speaker at a time and is best applied to live or video-recorded presentations. For panel presentations or group presentations, it is recommended that each speaker be evaluated separately. This rubric best applies to presentations

of sufficient length such that a central message is conveyed, supported by one or more forms of supporting materials and includes a purposeful organization. An oral answer to a single question not designed to be structured into a presentation does not readily apply to this rubric.

### GLOSSARY

*The definitions that follow were developed to clarify terms and concepts used in this rubric only.*

- **Content Development & Central message:** The main point/thesis/"bottom line"/"take-away" of a presentation. A clear central message is easy to identify; a compelling central message is also vivid and memorable.
- **Delivery techniques:** Posture, gestures, eye contact, and use of the voice. Delivery techniques enhance the effectiveness of the presentation when the speaker stands and moves with authority, looks more often at the audience than at his/her speaking materials/notes,

uses the voice expressively, and uses few vocal fillers ("um," "uh," "like," "you know," etc.).

- **Language:** Vocabulary, terminology, and sentence structure. Language that supports the effectiveness of a presentation is appropriate to the topic and audience, grammatical, clear, and free from bias. Language that enhances the effectiveness of a presentation is also vivid, imaginative, and expressive.
- **Organization:** The grouping and sequencing of ideas and supporting material in a presentation. An organizational pattern that supports the effectiveness of a presentation typically includes

# General Education Assessment Plan



## ORAL COMMUNICATION RUBRIC

an introduction, one or more identifiable sections in the body of the speech, and a conclusion. An organizational pattern that enhances the effectiveness of the presentation reflects a purposeful choice among possible alternatives, such as a chronological pattern, a problem-solution pattern, an analysis-of-parts pattern, etc., that makes the content of the presentation easier to follow and more likely to accomplish its purpose.

- **Supporting material:** Explanations, examples, illustrations, statistics, analogies, quotations from relevant authorities, and other kinds of information or analysis that supports the principal ideas of the presentation. Supporting material is generally credible when it is relevant and derived from reliable and appropriate sources. Supporting material is

highly credible when it is also vivid and varied across the types listed above (e.g., a mix of examples, statistics, and references to authorities). Supporting material may also serve the purpose of establishing the speaker's credibility. For example, in presenting a creative work such as a dramatic reading of Shakespeare, supporting evidence may not advance the ideas of Shakespeare, but rather serve to establish the speaker as a credible Shakespearean actor. An accurate oral citation gives the audience member enough information that they could easily locate a source if they needed to. An inaccurate oral citation would be "According the New York Times 9 Out of 10 people..." An accurate oral citation would be "According to a July 6th 2012 New York Times article titled *Seat Belt use in America*, written by Jonhanna Smith 9 out of 10 people..."

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# General Education Assessment Plan

## ORAL COMMUNICATION VALUE RUBRIC

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

	Capstone 4	Milestones 3		2	Benchmark 1
<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>Central Message</b>	Central message is compelling (precisely stated, appropriately repeated, memorable, and strongly supported.)	Central message is clear and consistent with the supporting material.		Central message is basically understandable but is not often repeated and is not memorable.	Central message can be deduced, but is not explicitly stated in the presentation.
<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 established the presenter's credibility/authority on the topic.  All outside sources used during the presentation are accurately cited orally.	Supporting materials (explanations, examples, illustrations, statistics, analogies, quotations from relevant authorities) make appropriate reference to information or analysis that supports the presentation or establishes the presenter's credibility/authority on the topic.  Some outside sources used during the presentation are accurately cited orally.		Supporting materials (explanations, examples, illustrations, statistics, analogies, quotations from relevant authorities) make appropriate reference to information or analysis that generally supports the presentation or established the presenter's credibility/authority on the topic.  Outside sources used during the presentation are referenced, but not clearly cited.	Insufficient supporting materials (explanations, examples, illustrations, statistics, analogies, quotations from relevant authorities) make appropriate reference to information or analysis that minimally supports the presentation or established the presenter's credibility/authority on the topic.  Outside sources used in presentation are not orally cited.

# General Education Assessment Plan

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## CULTURAL AND SOCIAL UNDERSTANDING RUBRIC

### DEFINITION

The Virginia Community College System defines a socially and culturally competent person as one who possesses an awareness, understanding, and appreciation of the interconnectedness of the social and cultural dimensions within and across local, regional, state, national, and global communities. Degree graduates will demonstrate the ability to: assess the impact that social institutions have on individuals and cultures—

past, present, and future; describe their own as well as others' personal ethical systems and values within social institutions; recognize the impact that arts and humanities have upon individuals and cultures; recognize the role of language in social and cultural contexts; and, recognize the interdependence of distinctive world-wide social, economic, geopolitical, and cultural systems.

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# General Education Assessment Plan

## CULTURAL AND SOCIAL UNDERSTANDING VALUE RUBRIC for more information contact [valued@acu.org](mailto:valued@acu.org)

	Capstone 4	3	Milestones 2	Benchmark 1
<b>Knowledge</b> Assess the impact that institutions have on individuals and culture—past, present, and future.	Student is able to articulate insights into the impact and interrelationship between all social institutions (these might include government, education, religion, family, language or the economy) and culture—past, present, and future. Student is able to categorize these impacts (between individual and cultural).	Student is able to demonstrate significant awareness of social institutions and their impact on individuals and culture. In doing so, student is able to identify three or more social institutions (these might include government, education, religion, family, language or the economy) and has demonstrated some understanding of the past, present, and future impacts that these institutions have upon individuals and culture.	Student is able to demonstrate some awareness of social institutions and their current, past, or future impact on individuals and culture. In doing so, student is able to identify at least two social institutions (these might include government, education, religion, family, language or the economy) and has demonstrated some broad understanding of the interconnectedness between these institutions and individuals or culture.	Student is able to describe only a minimal awareness of social institutions and their impact on culture. Student is able to identify fewer than two social institutions (e.g. government, education, religion, family, language, or the economy). Student has not demonstrated an awareness of the current interconnectedness of social institutions and individuals or cultures.
<b>Knowledge</b> Describes their own as well as others' personal ethical systems and values within social institutions.	Student is able to demonstrate a broad understanding of ethical systems. Student is aware of and able to describe numerous aspects of their own ethical systems (e.g. moral obligations, beliefs for human conduct, and standards for societal or business behavior). Student demonstrates a thorough understanding of the relationship between their ethical system and social institutions and is able to compare their own standards with systems espoused by others.	Student is able to demonstrate a general understanding of ethical systems. Student is aware of and able to describe several aspects of their own ethical systems (e.g. moral obligations, beliefs for human conduct, and standards for societal or business behavior). Student can demonstrate either an understanding of the relationship between their ethical system and social institutions or be able to compare their own standards with systems espoused by others.	Student is able to demonstrate some understanding of ethical systems. Student is aware of and able to describe one or more aspect(s) of their own ethical systems (e.g. moral obligations, beliefs for human conduct, and standards for societal or business behavior) but is unable to relate these aspects to social institutions or compare them to systems espoused by others.	Student is able to describe only a minimal awareness of ethical systems. Student is unable to identify any distinguishing features of their own ethical system (e.g. moral obligations, beliefs for human conduct, and standards for societal or business behavior).
<b>Skills</b> Recognize the impact that the arts and humanities have upon individuals and cultures.	Student is able to articulate a broad understanding of the relationship between arts (e.g. theater, music, visual) and humanities (e.g. language, literature, philosophy and history) and individuals and cultures. Multiple connections are made between these elements.	Student is able to describe numerous impacts that arts (e.g. theater, music, visual) or humanities (e.g. language, literature, philosophy and history) may have upon individuals or cultures. Student is able to outline interconnectedness between numerous aspects of arts/humanities and culture.	Student is able to describe two or fewer impacts that arts (e.g. theater, music, visual) or humanities (e.g. language, literature, philosophy and history) may have upon individuals or cultures.	Students are able to describe only a basic impact that arts (e.g. theater, music, visual) and humanities (e.g. language, literature, philosophy and history) have on individuals and cultures.
<b>Skills</b> Recognize the role of language in social and cultural contexts.	Students recognize the role of language in social and cultural contexts. Students can discriminate between different aspects of language forms and styles in difference social settings (e.g. at home, in community, in professional setting).	Students are aware of and can describe the role of language in social and cultural contexts. Students are able to differentiate among communication forms and styles in numerous social settings (e.g. at home, in community, in professional setting).	Students are able to demonstrate a minimal awareness of the relationship between language and cultural contexts. Student displays some understanding of how languages adapt to different social and cultural contexts (e.g. at home, in community, in professional setting).	Students have little to no awareness of the relationship between language and cultural contexts. Students cannot differentiate among communication forms or styles in various social settings (e.g. at home, in community, in professional setting).
<b>Skills</b> Recognize the interdependence of distinctive world-wide social, economic, geo-political, and cultural systems.	Student is able to demonstrate an understanding of and is able to differentiate between the interdependence of each of the following distinctive world-wide systems: social, economic, geo-political, and cultural systems. Student is able to distinguish between world-wide systems and outline individual systems' interdependence.	Student recognizes and demonstrates understanding of the interdependence of three or more of the following distinctive world-wide systems: social, economic, political, and cultural systems. Student demonstrates an understanding of the interdependences of several world-wide systems.	Student recognizes an understanding of the existence of one or two of the following distinctive world-wide systems: social, economic, geo-political, or cultural. Student displays some awareness of the interdependence of any two (or more) world-wide systems.	Student is able to demonstrate a minimal awareness of the existence of at least one of the following distinctive world-wide systems: social, economic, geo-political, or cultural.



### PERSONAL DEVELOPMENT RUBRIC

#### DEFINITION

The Virginia Community College System defines a personally developed person as one who strives for physical well-being and emotional maturity. TCC graduates will demonstrate the ability to develop and/or refine personal wellness goals and develop and/or enhance the knowledge, skills and understanding to make informed academic, social, personal, career, and interpersonal decisions.

# General Education Assessment Plan

## PERSONAL DEVELOPMENT VALUE RUBRIC

for more information contact [valued@aacu.org](mailto:valued@aacu.org)

Explanation	Capstone 4	Milestones 2		Benchmark 1
<b>Personal Wellness</b> Demonstrates an ability to interpret personal wellness information, make modification(s), develop personal wellness goal(s), and create a strategy for achieving personal wellness goal(s).	Student interprets personal wellness information in terms of one's own personal wellness and identifies the modification(s) needed to pursue personal wellness goals. Student describes making modification(s) for personal wellness and articulates a strategy for achieving personal wellness goal(s).	Student demonstrates ability to interpret one's own personal wellness and articulates one or more modification(s) that are needed to pursue personal wellness goal(s). Student describes personal wellness goal(s) and implements at least one modification, but does not identify a strategy for reaching personal wellness goal(s).	Student demonstrates an understanding of personal wellness information and begins to interpret personal wellness information in terms of one's own personal wellness. Student begins to articulate personal wellness goal(s) and at least one modification that may be needed for pursuing goal(s).	Student begins to demonstrate an understanding of components of personal wellness, but may be unable to interpret it in terms of one's own personal wellness. Student does not describe personal wellness goal(s).
<b>Decision-Making</b> Demonstrates logical, well-balanced ability to make social, personal, and interpersonal decisions.	Student describes social, personal, and interpersonal decision(s) that are logical and demonstrates balanced thinking of critical thinking and reflective thought. Student considers multiple options and consequences and gives thorough consideration for using the best option, given alternative option(s) and consequence(s).	Student describes social, personal, and interpersonal decision(s) that are not reactionary or emotional but demonstrates some balanced, logical thinking with critical thinking and reflective thought. Student considers more than one option and gives some consideration for consequence(s) of choice.	Student demonstrates social, personal, and interpersonal decision-making that is not entirely reactionary or emotional. Decisions are given some critical thinking and/or reflective thought. Student gives little or no consideration for consequence(s).	Student describes social, personal, and interpersonal decisions that are reactive to situations or entirely emotional and are decided upon without critical thinking and/or reflective thought.
<b>Academic and Professional Goal-Setting</b> Describes personal, academic, and/or professional goal(s) and has developed a plan for achieving goal(s).	Student describes thoughtful, comprehensive personal, academic, and/or professional goal(s) that has a corresponding reasonable, thorough plan for achieving the goal(s).	Student describes personal, academic, or professional goal(s) with depth. Plan for achieving goal(s) is clearly described but may be inconsistent, unreasonable, or incomplete.	Student describes personal, academic, or professional goal(s), but goal(s) may lack clarity and/or complexity. Plan to achieve goal(s) is established.	Student describes consideration for personal, academic, and/or professional goal(s). No demonstrated plan for achieving goal(s) present.
<b>Social and Interpersonal Development</b> Demonstrates the ability to appreciate and empathize with the needs, values, and perspectives of others in relation to self.	Student describes the complexity, and validity of the needs, values, and perspectives of others in relation to self. Student demonstrates deeper appreciation and empathy for others' needs, values, and perspectives in relation to self. Student respects the opinions of others, even when they differ.	Student demonstrates an understanding of the complexity of others' needs, values, and perspectives. Student describes validity of others' needs, values, and perspectives with some relation to self. Student expresses some appreciation and empathy for others' needs, values, and perspectives in relation to self. Student gives consideration to the differing opinions of others.	Student describes the needs, values, and perspectives of others with some consideration for the complexity of them. Student shows some understanding of validity of others' needs, values, and perspectives. Student shows little to no appreciation or empathy for these needs, values, and perspectives of others in relation to self. Student begins to demonstrate acceptance of differing opinions of others.	Student is able to express the needs, values, and perspectives of others but demonstrates little to no understanding of the complexity or validity of them. Student shows little to no understanding of others' needs, values, and perspectives in relation to self. Student may respond negatively or critically to differing opinions of others.
<b>Personal Identity</b> Describes one's self in terms of personal identity, aspects and intersections, and as a part of a larger community.	Student demonstrates understanding of self with multiple personal identity intersections and the complexities of one's self with connections to personal identity and aspects, as well as to larger communities.	Student demonstrates understanding of self in two or more intersections of personal identity and demonstrates complex understanding of the connection of self to a larger community in more than one aspect of personal identity.	Student begins to describe personal identity and its aspects, as well intersections of at least two aspects of personal identity. Student demonstrates some understanding of how self is connected to a larger community in at least one aspect of personal identity.	Student expresses an understanding of self with limited understanding of personal identity and its aspects, and shows little to no understanding of the intersections of personal identity or the connection of self to a larger community.

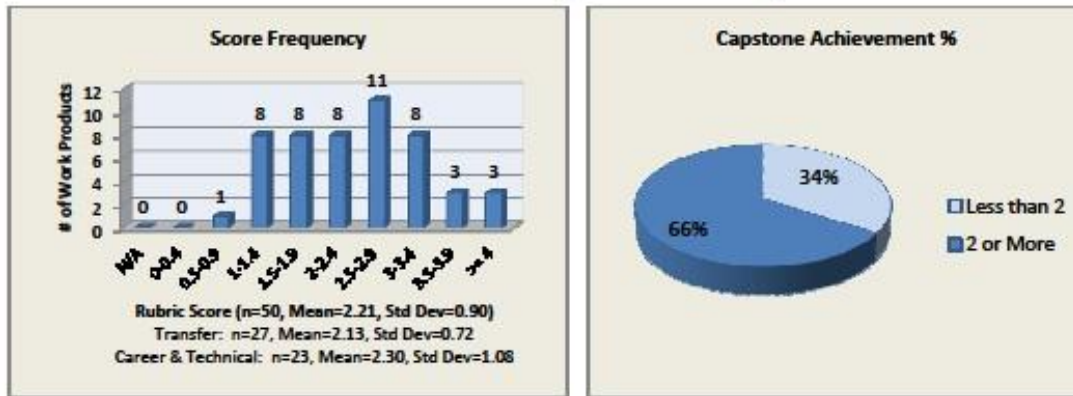


### **Appendix E: Data Analyses**

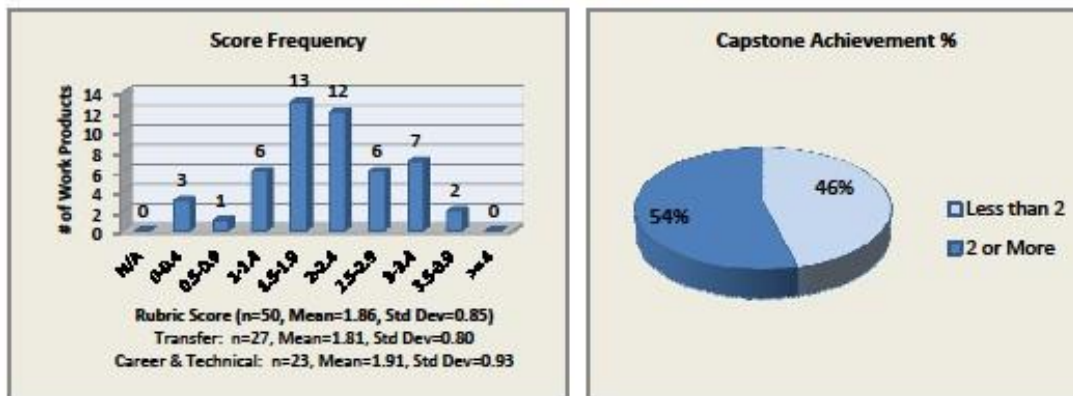
# General Education Assessment Plan

## Written Communication Fall 2012 Assessment Results

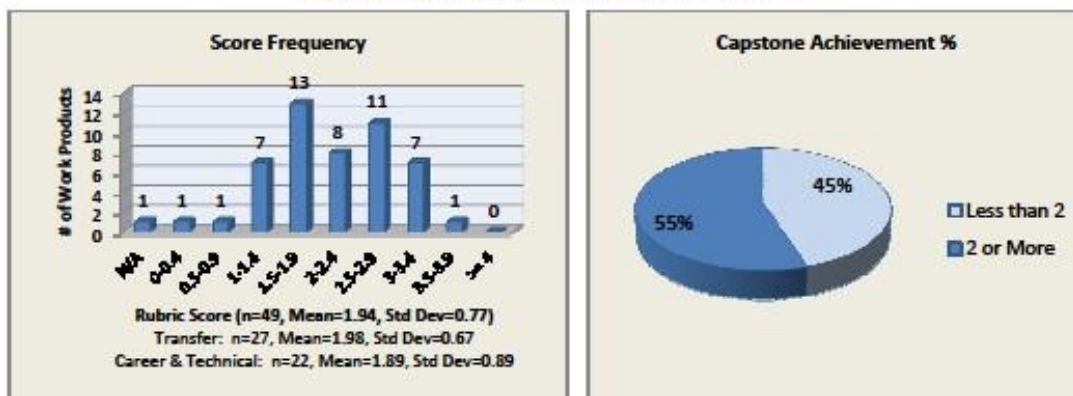
### Context of and Purpose for Writing



### Content Development



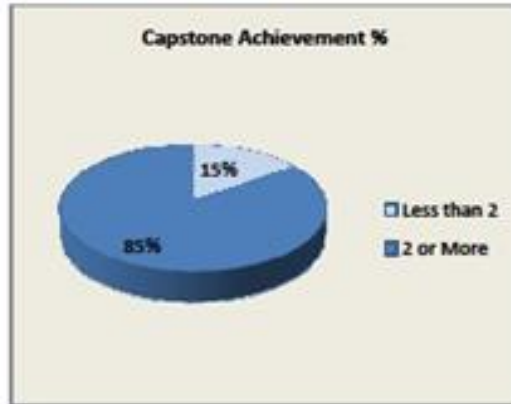
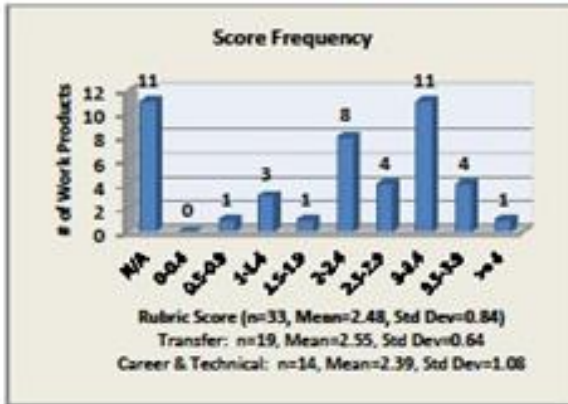
### Genre and Disciplinary Conventions



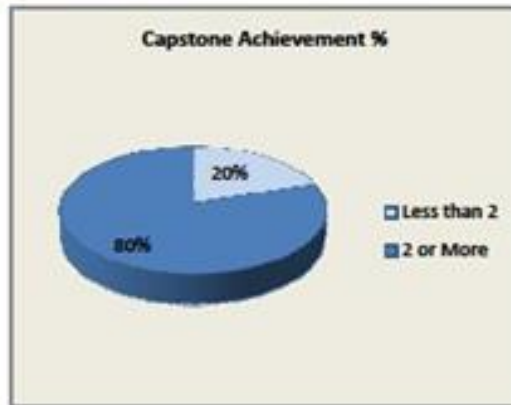
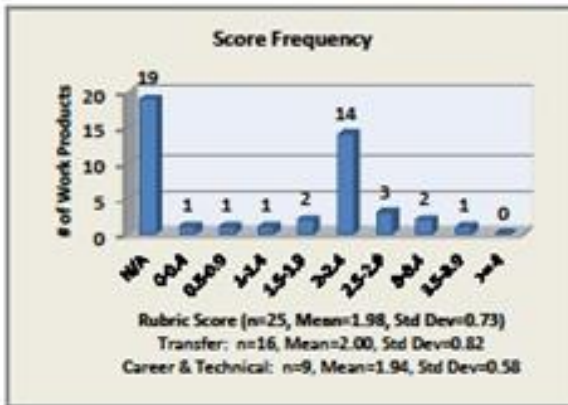
# General Education Assessment Plan

## Information Literacy Fall 2012 Assessment Results

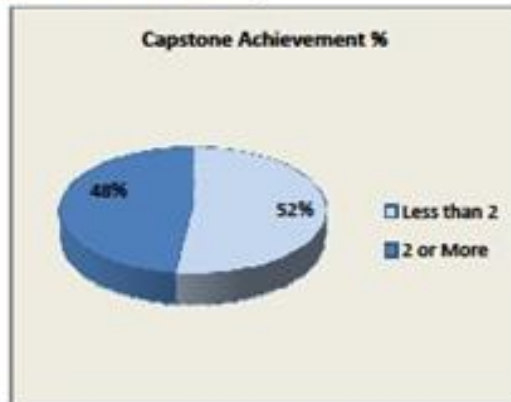
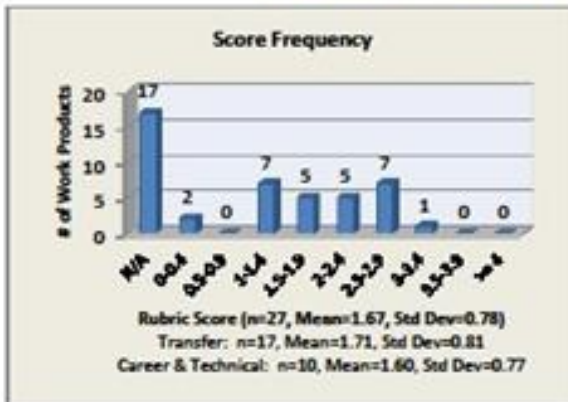
### Determine the Extent of Information Needed



### Access the Needed Information

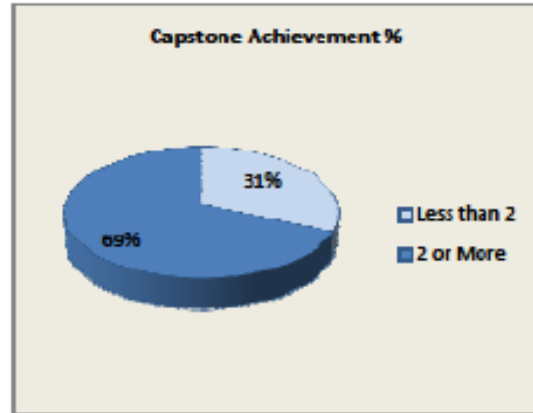
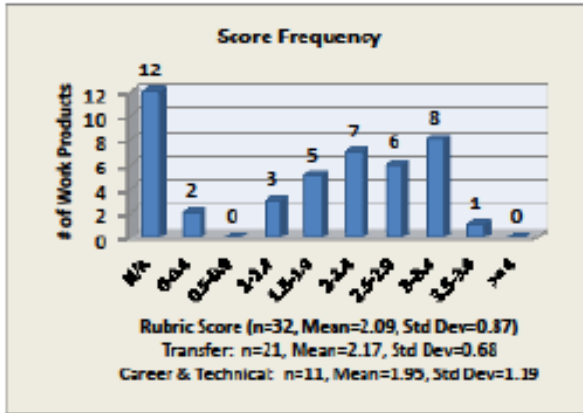


### Evaluate Information and Sources Critically

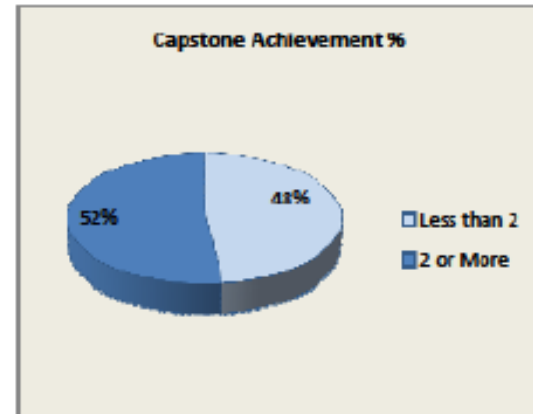
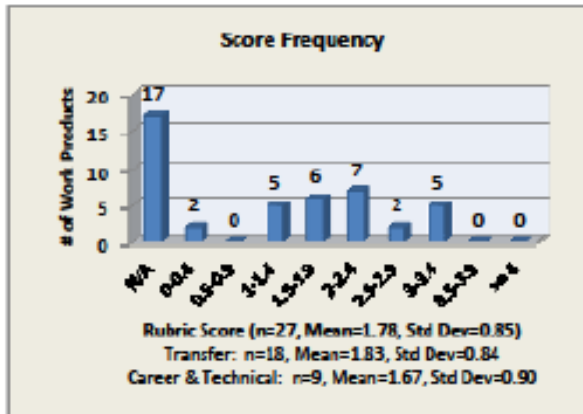


## Information Literacy Fall 2012 Assessment Results

### Use Information Effectively to Accomplish a Specific Purpose



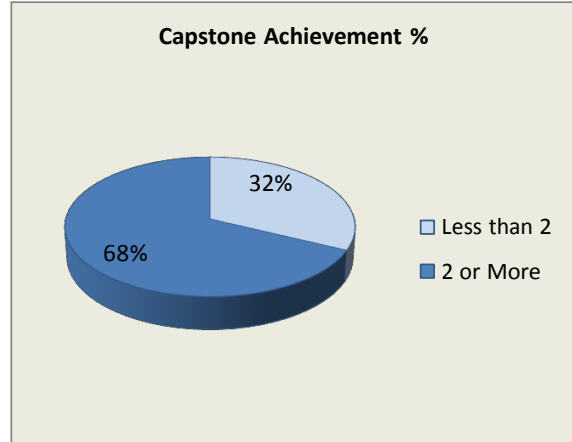
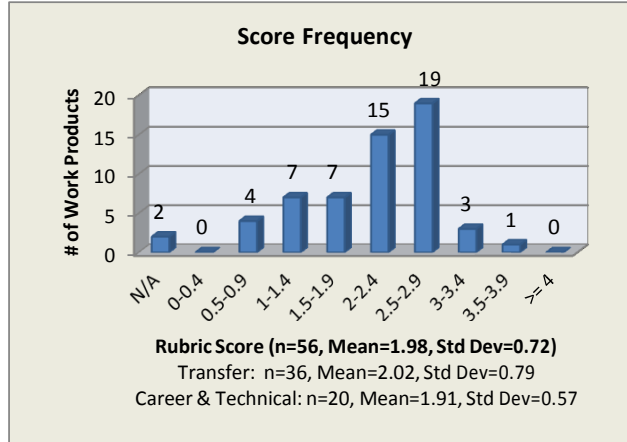
### Access and Use Information Ethically and Legally



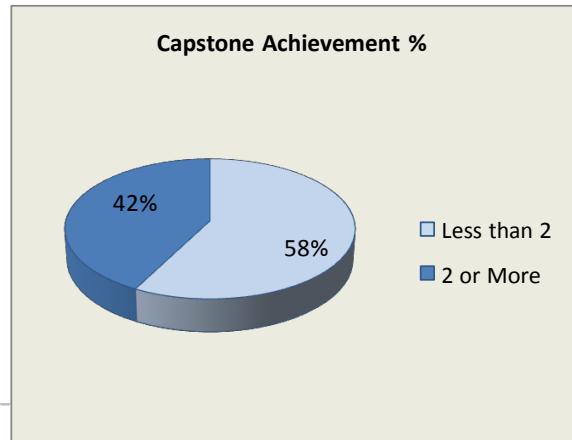
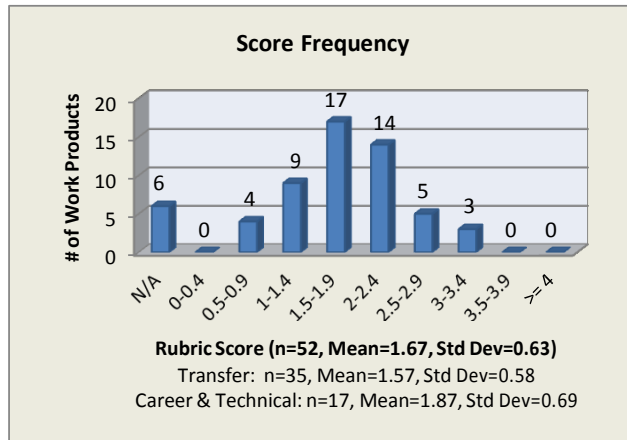
# General Education Assessment Plan

## Critical Thinking Spring 2013 Assessment Results

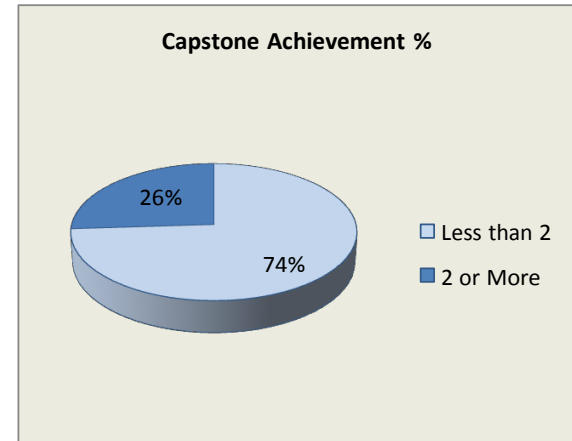
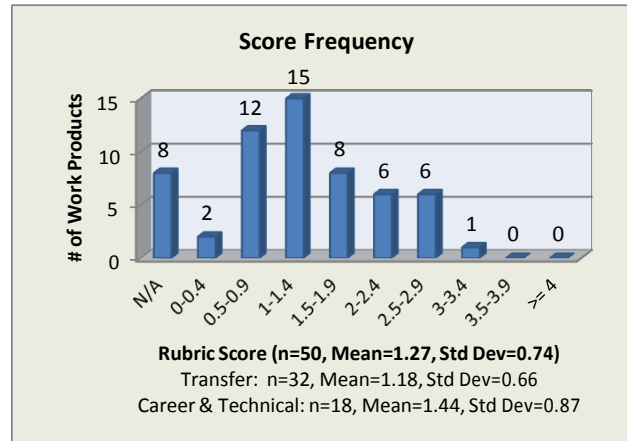
### Explanation of Issues



### Evidence



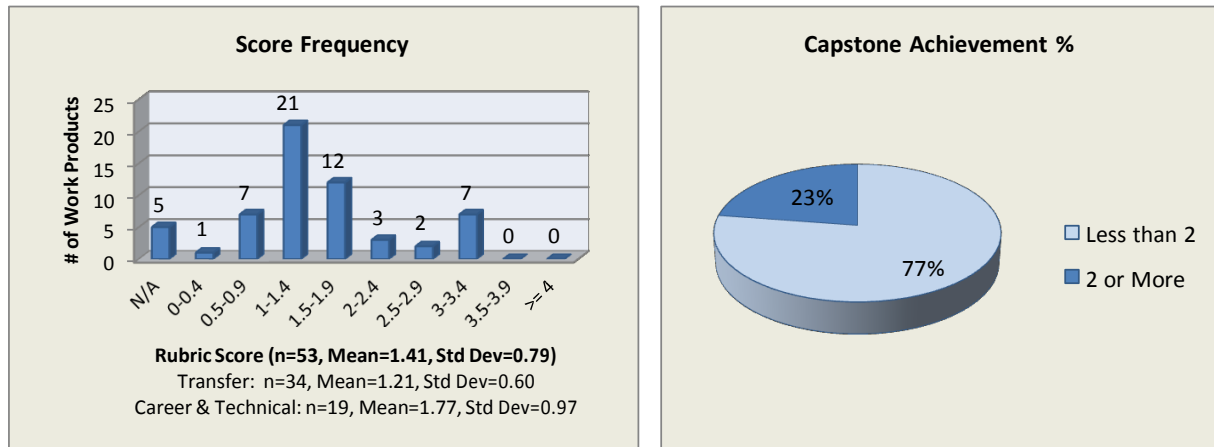
### Influence of Context and Assumptions



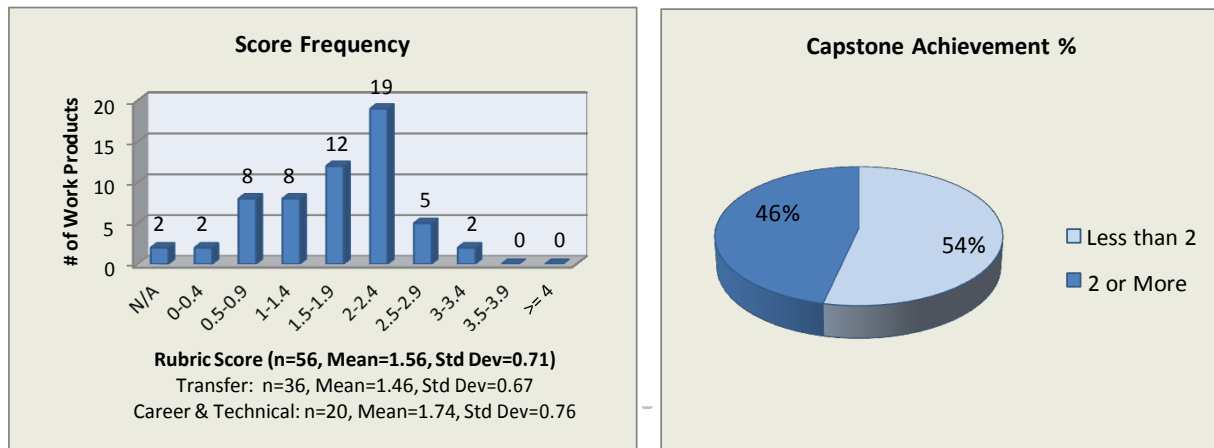
# General Education Assessment Plan

## Critical Thinking Spring 2013 Assessment Results

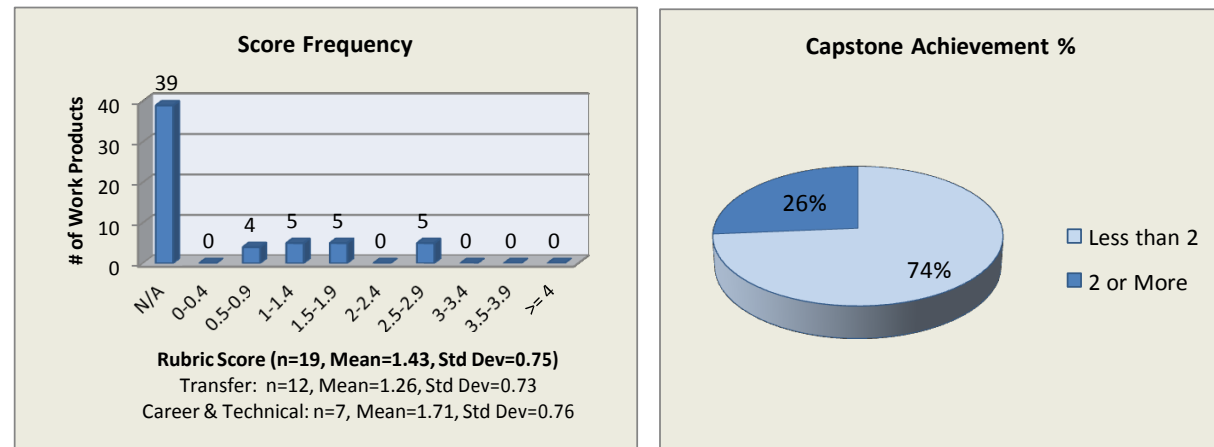
### Student's Position - Perspective, Thesis/Hypothesis



### Conclusions and Related Outcomes



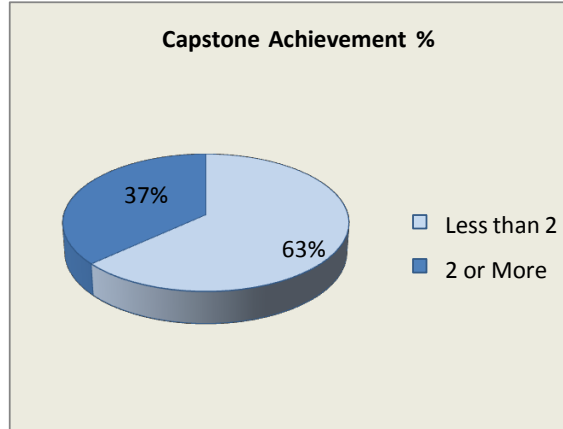
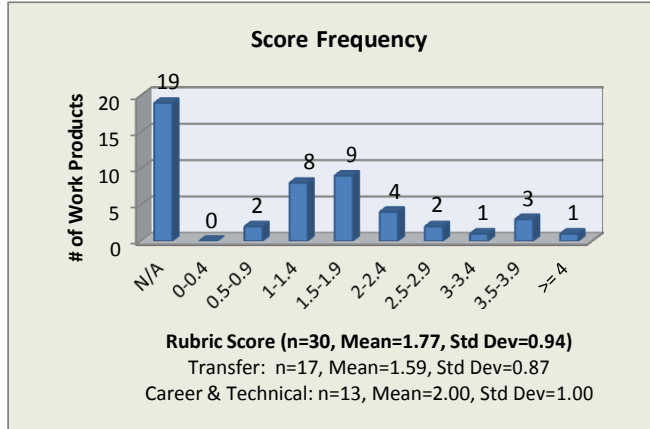
### Solving Problems



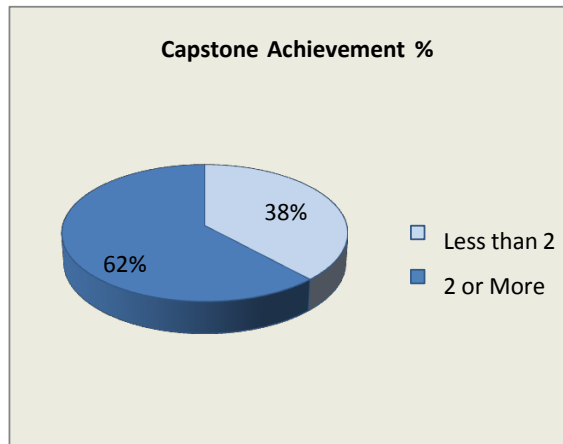
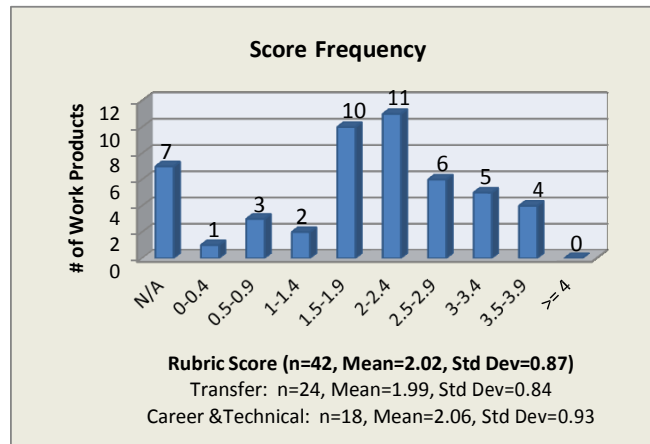
# General Education Assessment Plan

## Quantitative Reasoning Spring 2013 Assessment Results

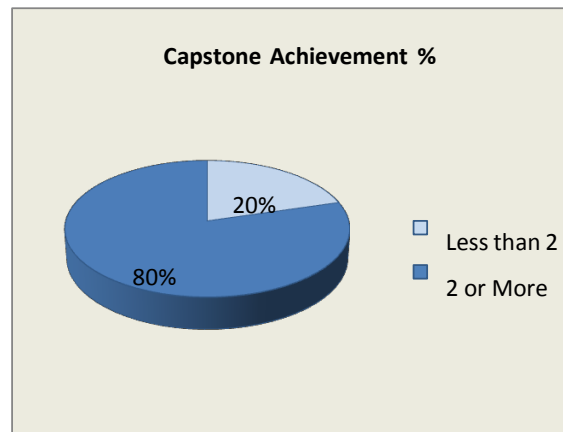
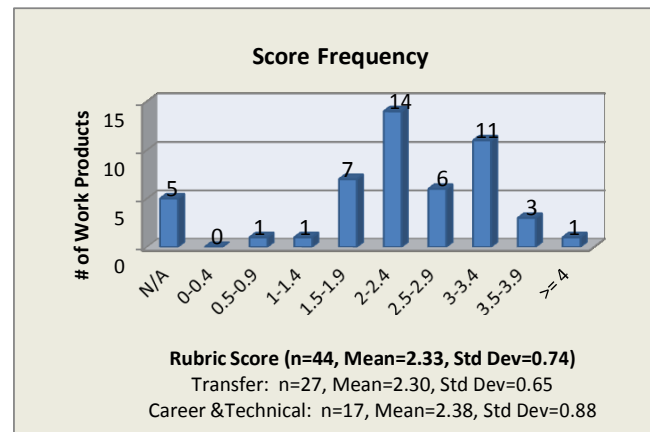
### Interpretation



### Representation



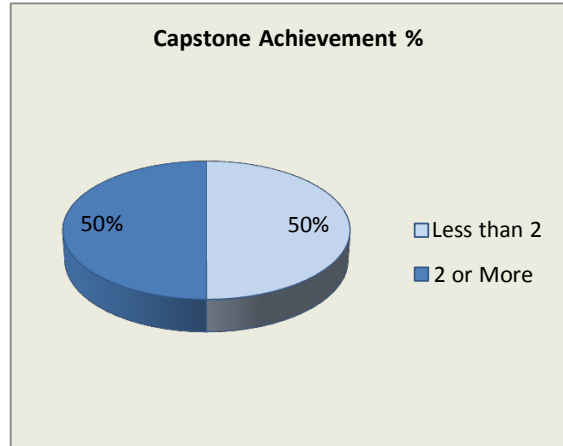
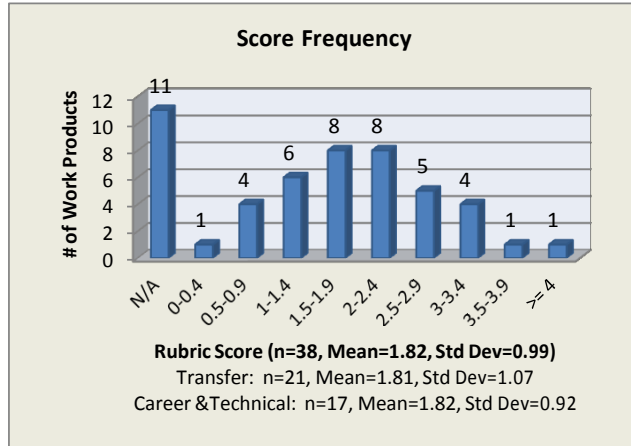
### Calculation



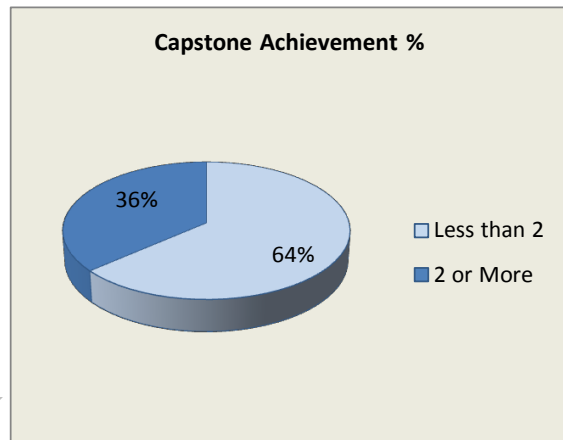
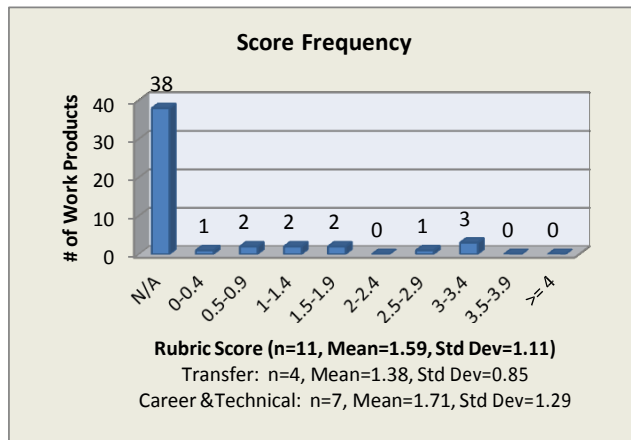
# General Education Assessment Plan

## Quantitative Reasoning Spring 2013 Assessment Results

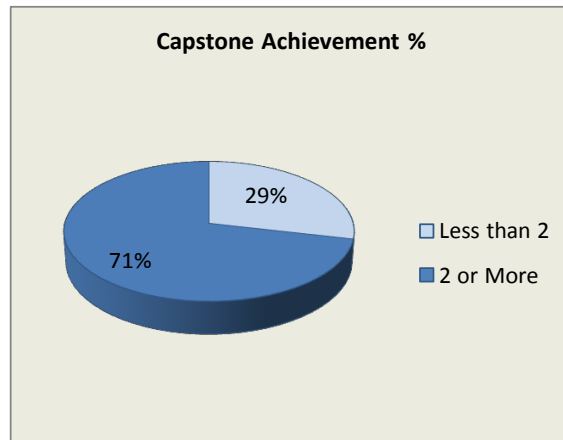
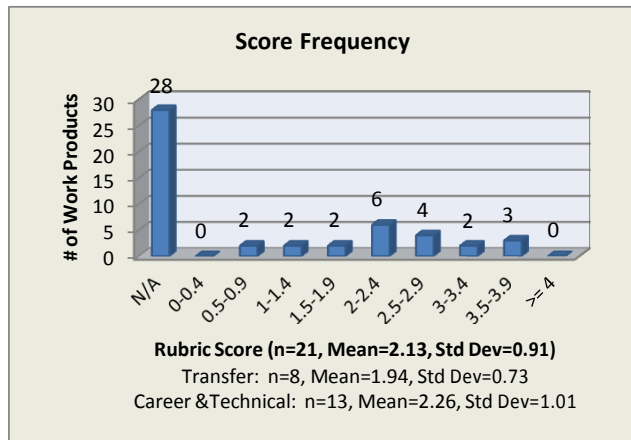
### Application/Analysis



### Assumptions



### Communication

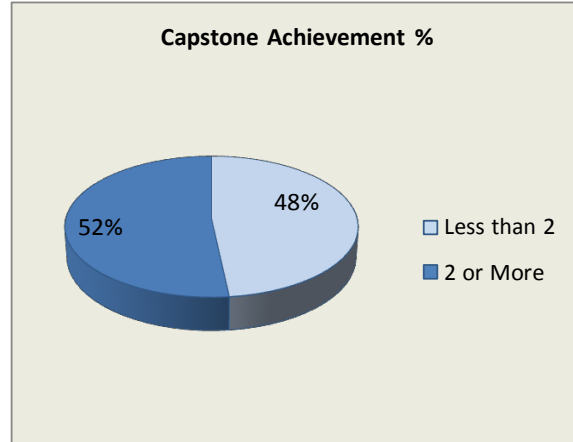
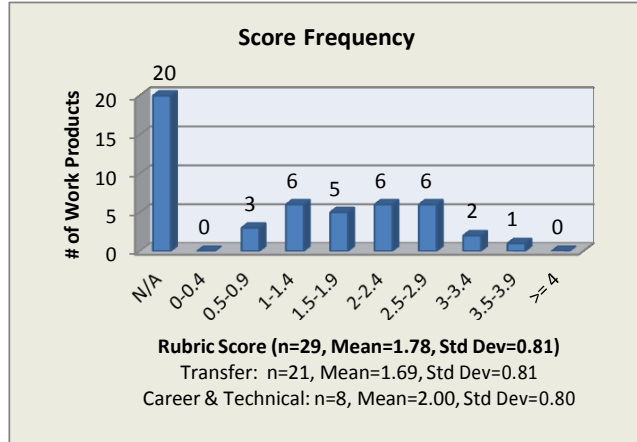




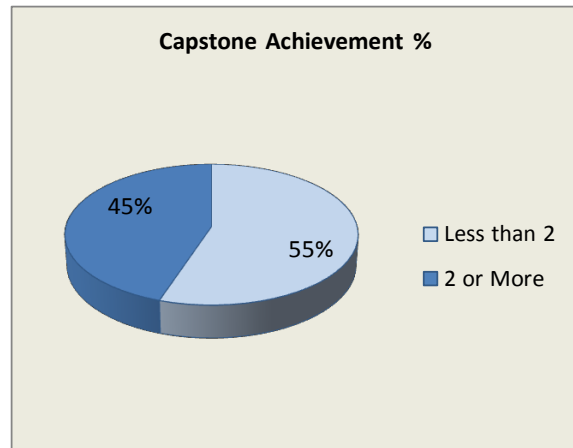
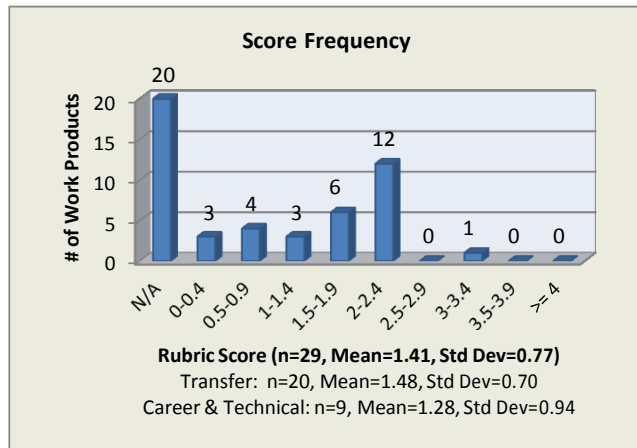
# General Education Assessment Plan

## Scientific Reasoning Spring 2013 Assessment Results

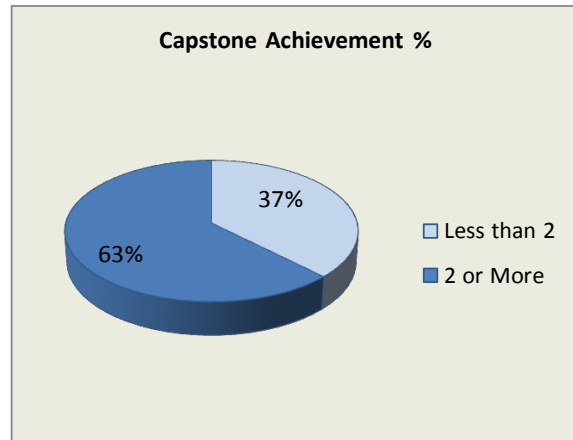
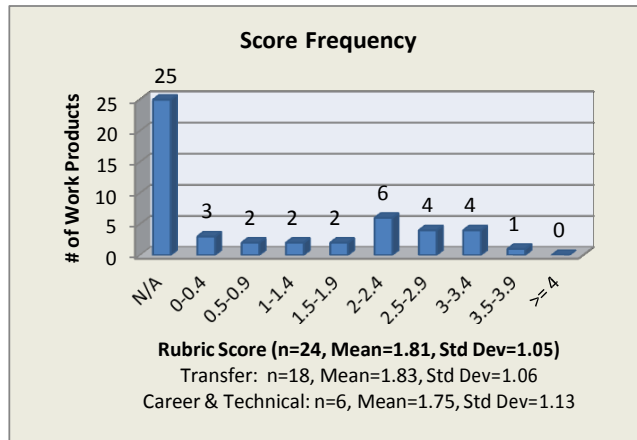
### Argument or Topic Selection



### Existing Knowledge, Research and/or Views

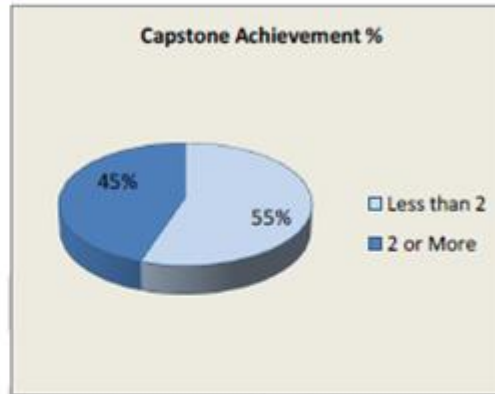
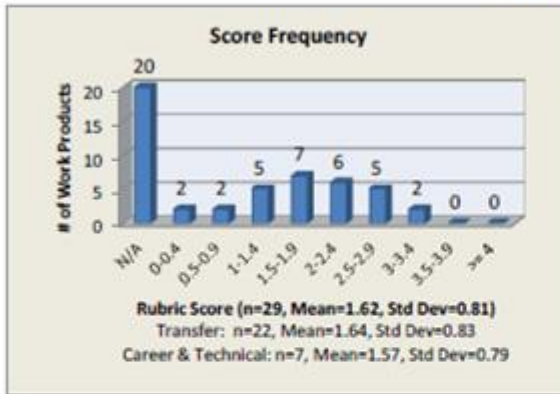


### Methodology

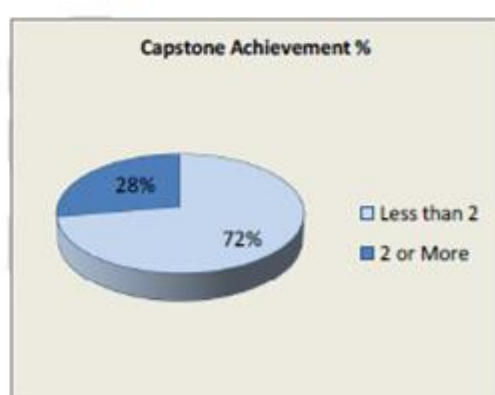
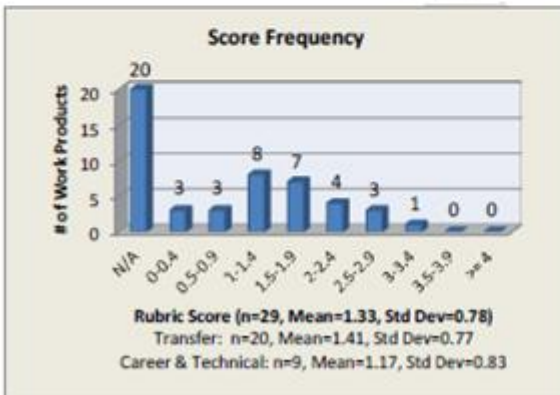


## Scientific Reasoning Spring 2013 Assessment Results

### Analysis



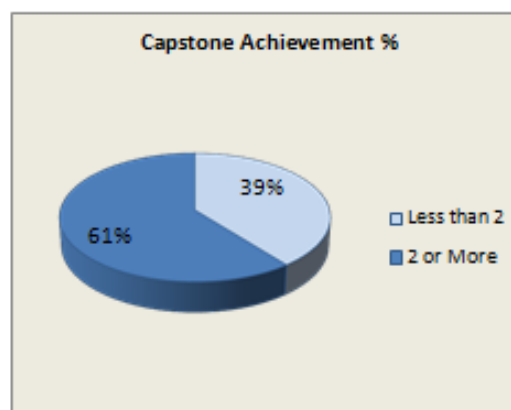
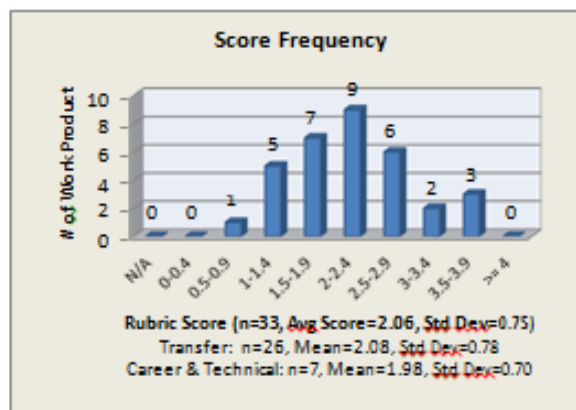
### Conclusions, Limitations and Implications



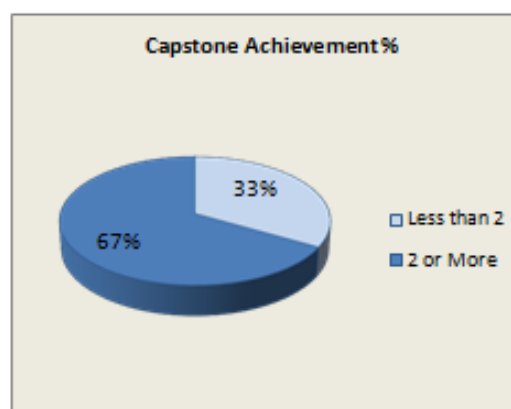
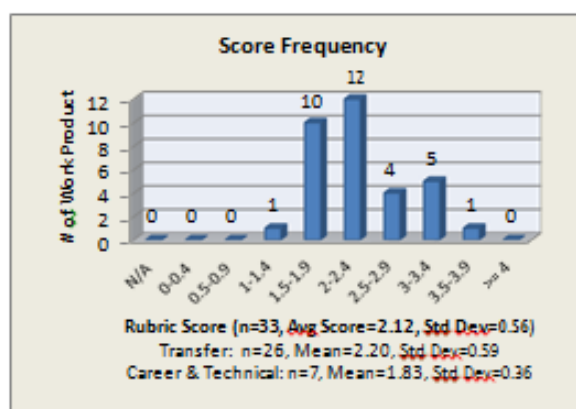
# General Education Assessment Plan

## Oral Communication Summer 2013 Assessment Results

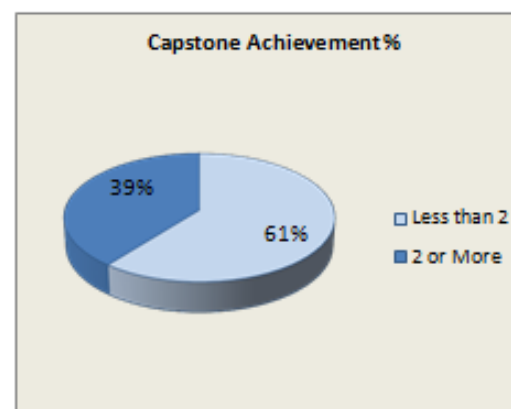
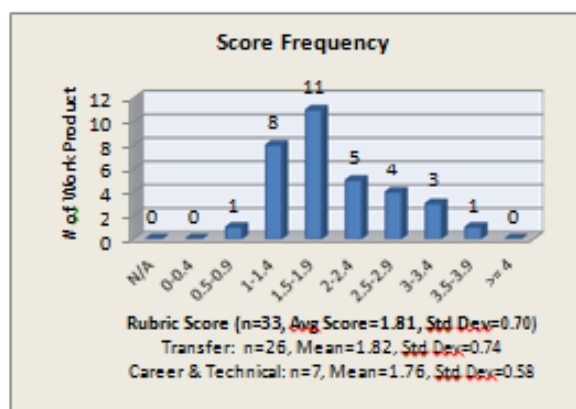
### Organization



### Language



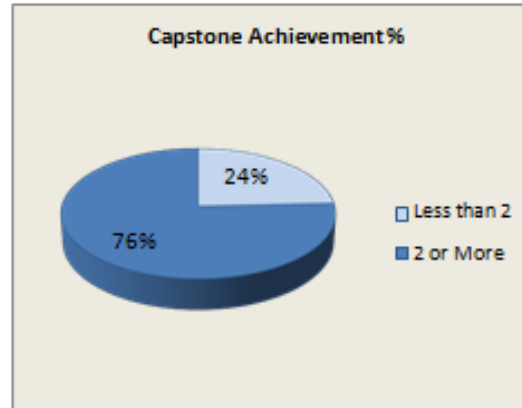
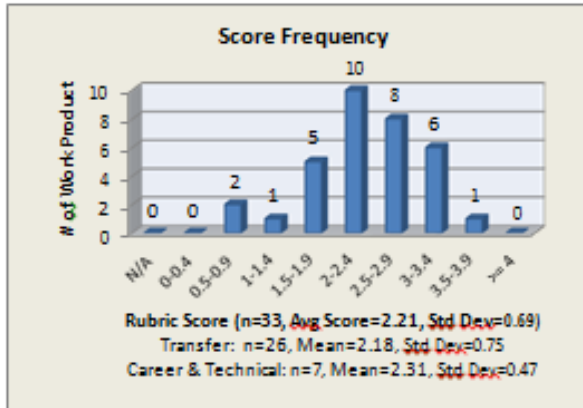
### Delivery



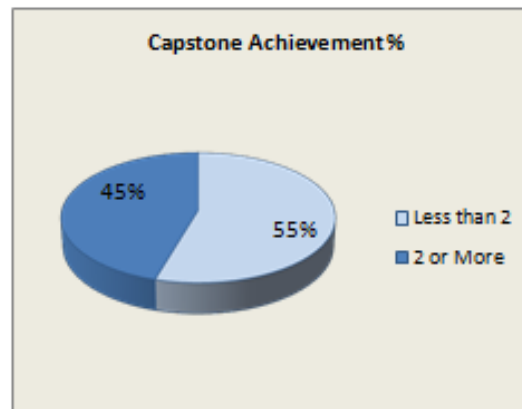
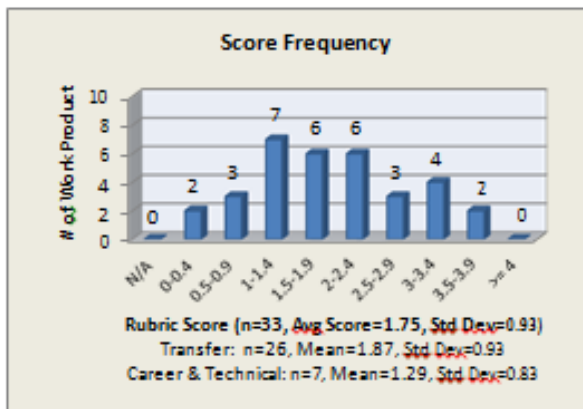
# General Education Assessment Plan

## Oral Communication Summer 2013 Assessment Results

### Central Message



### Supporting Material



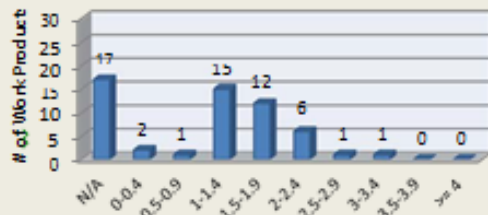
# General Education Assessment Plan

## Cultural and Social Understanding Fall 2013 Assessment Results

### Knowledge

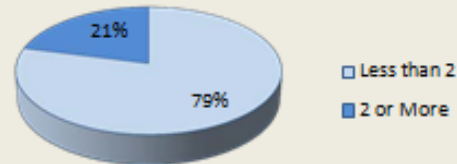
(Assess the impact that institutions have on individuals and culture)

Score Frequency



Rubric Score (n=38, Avg Score=1.43, Std Dev=0.57)  
 Transfer: n=19, Mean=1.49, Std Dev=0.64  
 Career & Technical: n=19, Mean=1.38, Std Dev=0.50

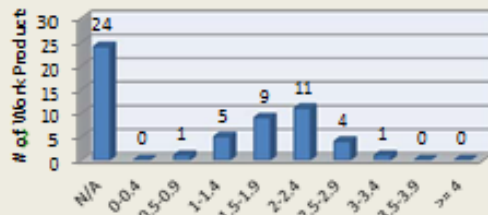
Capstone Achievement %



### Knowledge

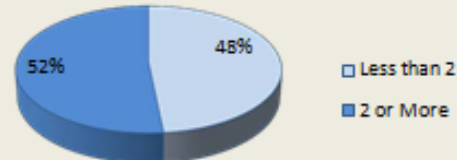
(Describes their own as well as others' personal ethical systems and values)

Score Frequency



Rubric Score (n=31, Avg Score=1.80, Std Dev=0.54)  
 Transfer: n=17, Mean=1.72, Std Dev=0.67  
 Career & Technical: n=14, Mean=1.89, Std Dev=0.34

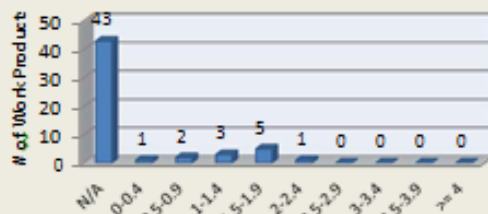
Capstone Achievement %



### Skills

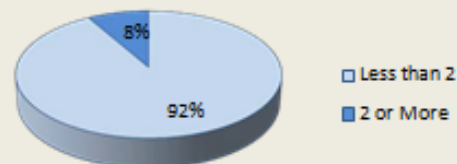
(Recognize the impact that arts and humanities have upon individuals and cultures)

Score Frequency



Rubric Score (n=12, Avg Score=1.18, Std Dev=0.59)  
 Transfer: n=8, Mean=1.13, Std Dev=0.62  
 Career & Technical: n=4, Mean=1.29, Std Dev=0.58

Capstone Achievement %

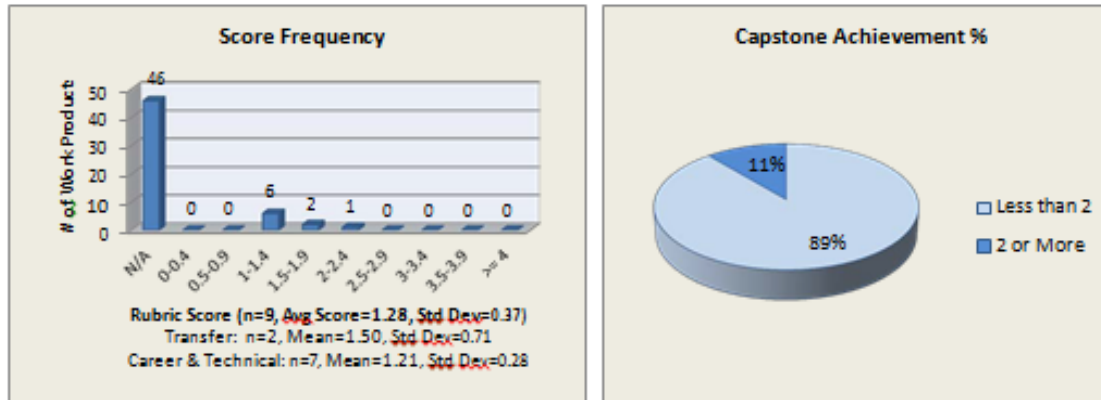


# General Education Assessment Plan

## Cultural and Social Understanding Fall 2013 Assessment Results

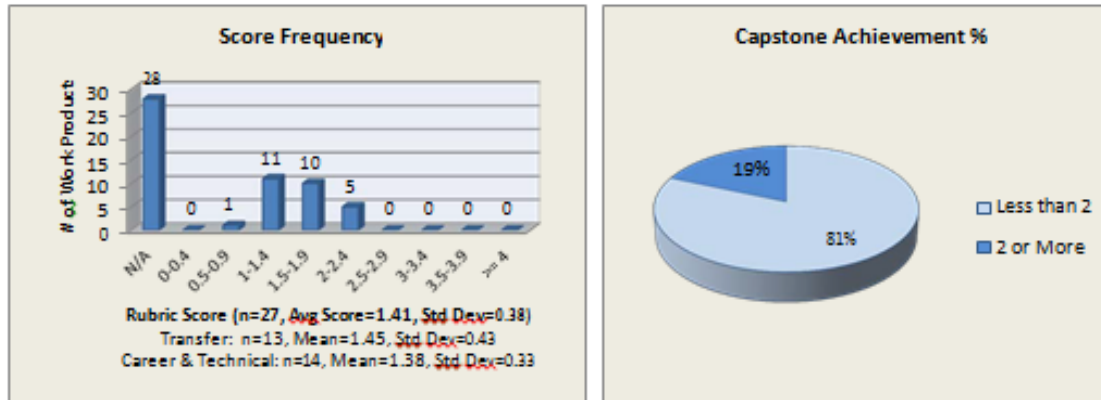
### Skills

(Recognize the role of language in social and cultural contexts)



### Skills

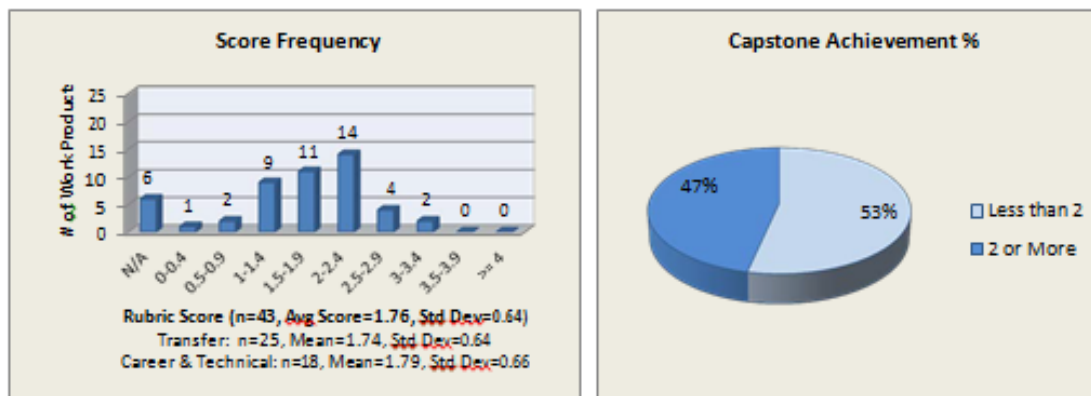
(Recognize interdependence of world-wide social, economic, geo-political, and cultural systems)



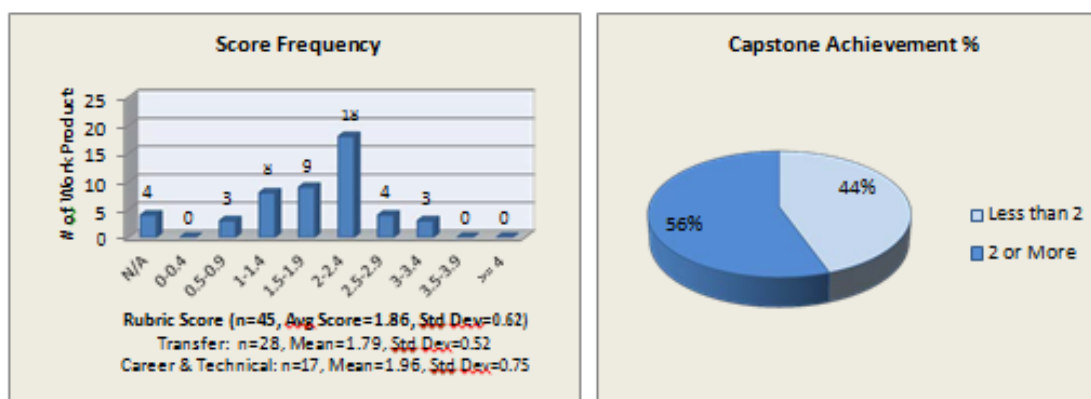
# General Education Assessment Plan

## Personal Development Spring 2014 Assessment Results

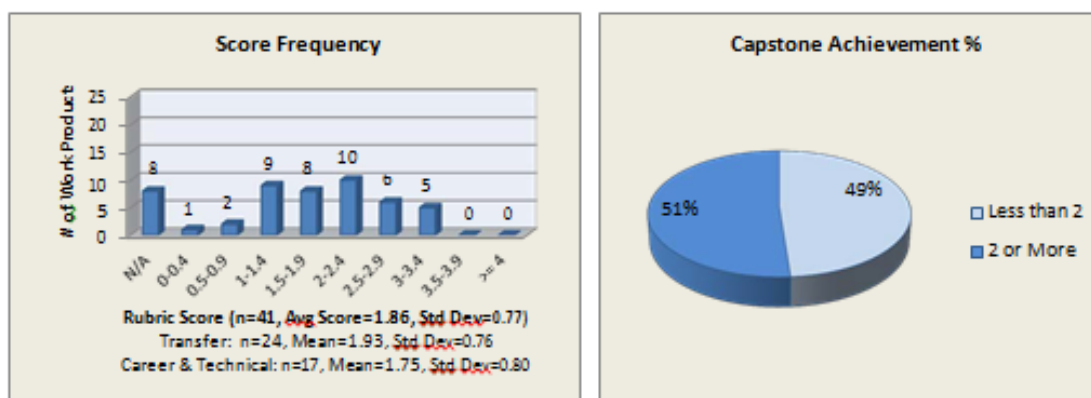
### Personal Wellness



### Decision-Making



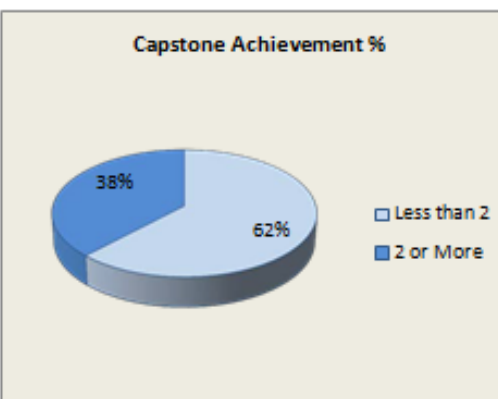
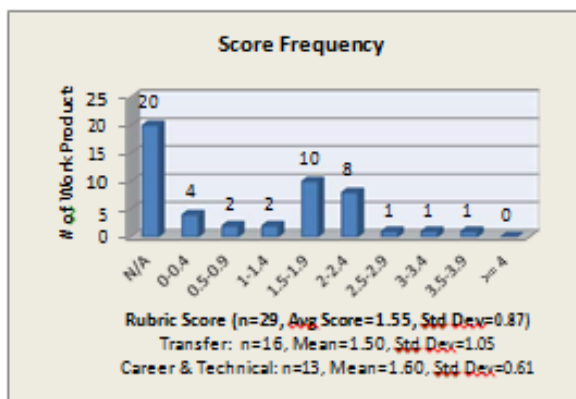
### Academic and Professional Goal-Setting



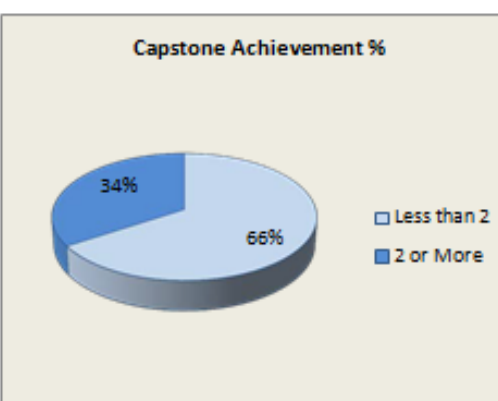
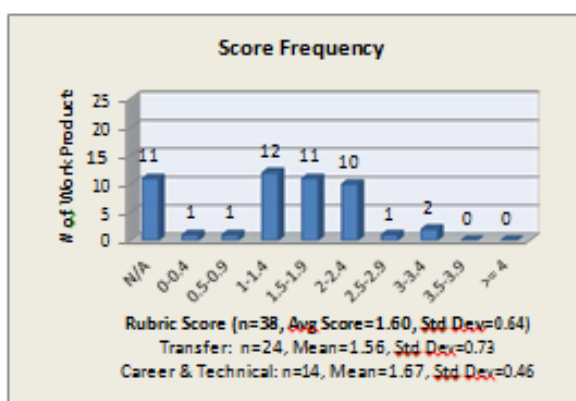
# General Education Assessment Plan

## Personal Development Spring 2014 Assessment Results

### Social and Interpersonal Development



### Personal Identity

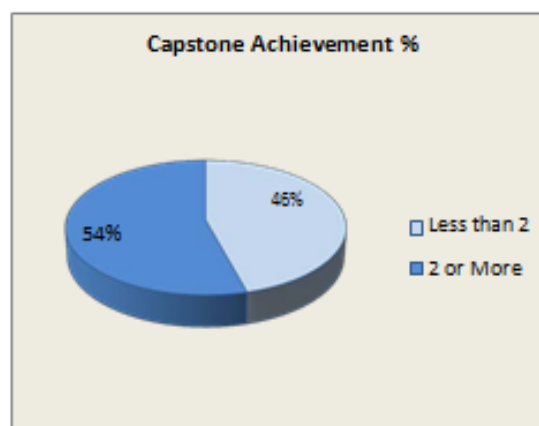
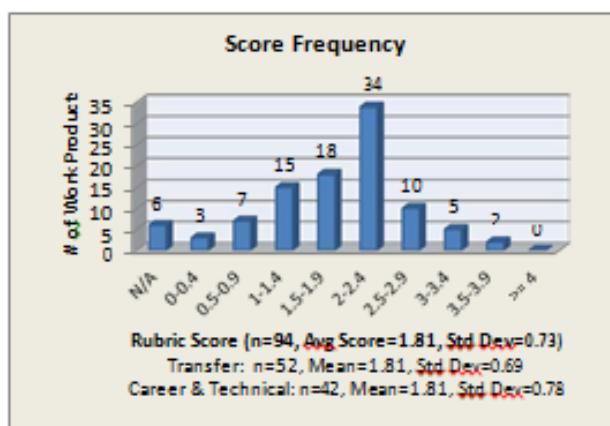




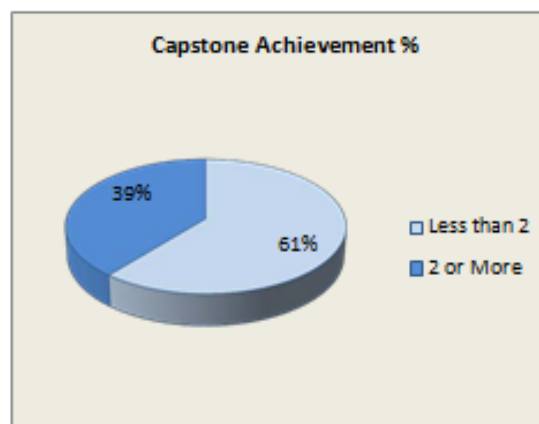
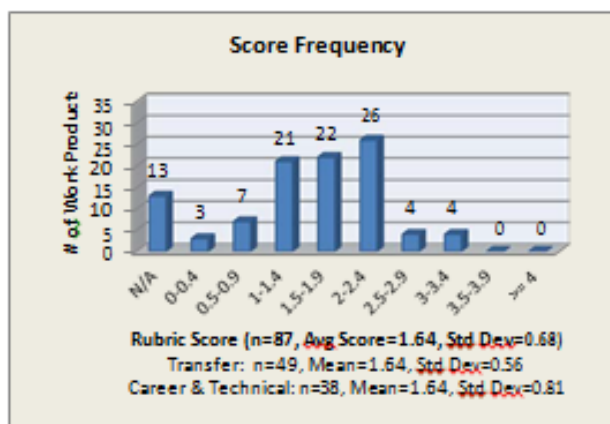
# General Education Assessment Plan

## Critical Thinking Spring 2014 Assessment Results

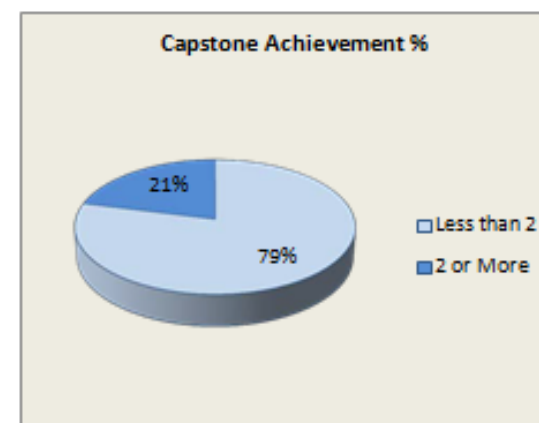
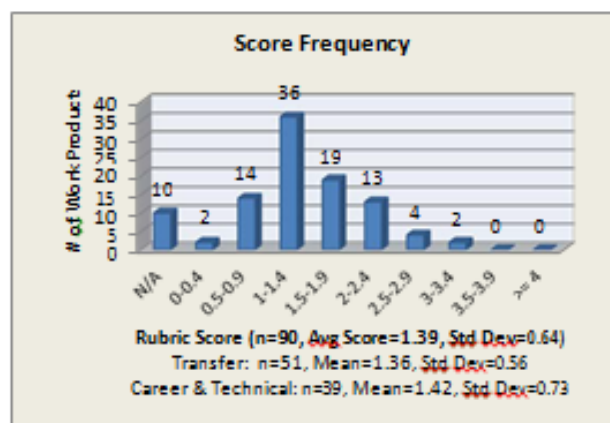
### Explanation of Issues



### Evidence



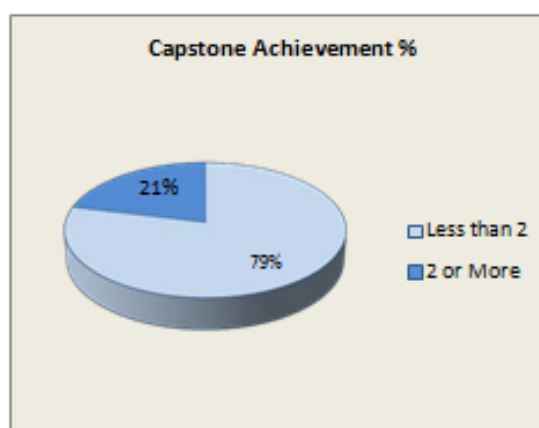
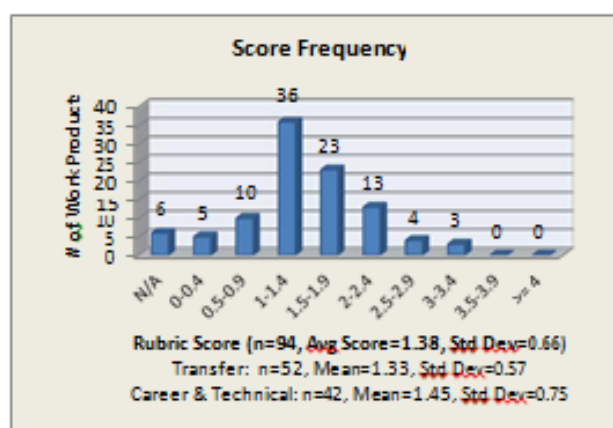
### Influence of Context and Assumptions



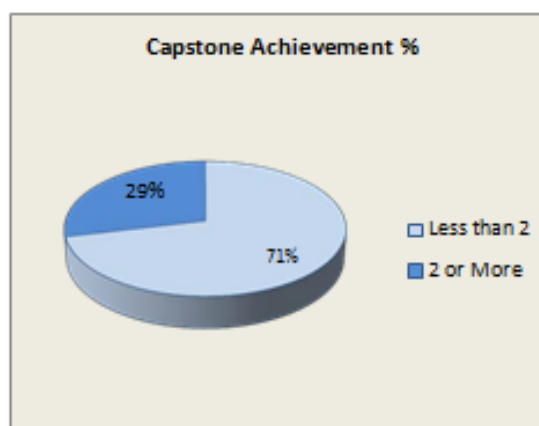
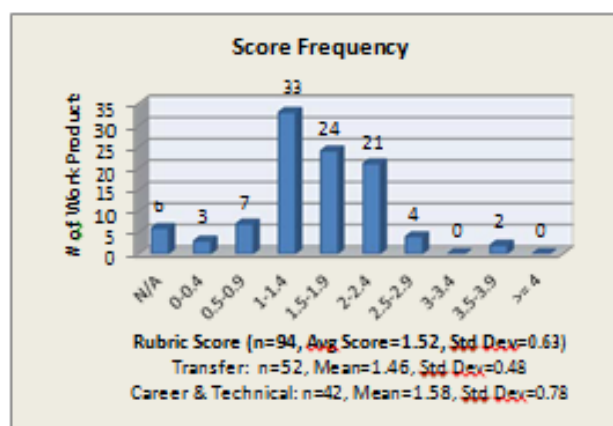
# General Education Assessment Plan

## Critical Thinking Spring 2014 Assessment Results

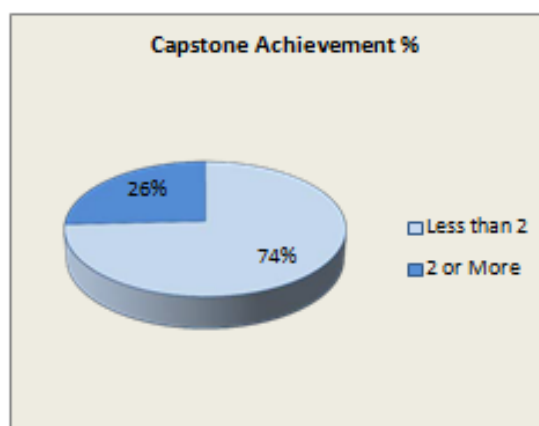
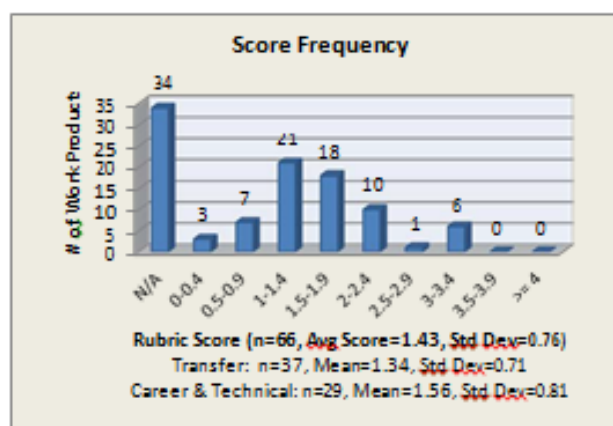
### Student's Position - Perspective, Thesis/Hypothesis



### Conclusions and Related Outcomes



### Solving Problems



### **Appendix F: Timeline for Changes to Official TCC Course Outlines**

# General Education Assessment Plan

## Timeline for Changes to *Official TCC Course Outlines*

August

Elected discipline Faculty Facilitator begins his or her term.

Substantial changes recommended by the Curriculum Committee in February and approved by the VP for Student Learning and CAO are activated in i-INCURR.

Minor changes to the Official Course Outline (from the previous year) recommended by Discipline Faculty and assigned Dean/Director and approved by CAO are activated for fall semester.

Fall semester Discipline Meetings (dates to be determined) – any substantial changes to the Official Course Outline need to be presented by Discipline Faculty at this time to the Faculty Facilitator. Substantial changes are those defined by the Curriculum Committee as such.

September

Any new minor changes to the Official Course Outline approved by discipline Faculty and assigned Dean/Director will be entered into i-INCURR by the assigned Dean/Director. **September – May 15**

Substantial changes to the Official Course Outline presented in the fall discipline meetings are forwarded to the assigned academic Dean/Director for action. If recommended by the academic Dean/Director, the changes are forwarded to the Office of Academic Services for review and sent to the chair of the Curriculum Committee for action. Recommended substantive changes are forwarded to the VP of Student Learning and CAO for action. In all cases, requests for substantive changes must be submitted to the Curriculum Committee in time for their February meeting in order to provide time for the committee's action.

February

The Curriculum Committee will act on the Substantial changes to the Official Course Outlines presented in the fall semester (to include January). Substantial changes recommended by the Curriculum Committee in February are forwarded to the VP for action and, if approved, made live in i-INCURR effective on August 1.

Any substantial changes to the Official Course Outline that are not recommended by the Curriculum Committee or the VP must be resolved no later than the April Curriculum Committee meeting since the Committee does not meet during the summer.

April

Discipline Faculty Facilitators will be elected as needed for the next academic year.

May

Recommended minor changes to the Official Course Outline must be entered in i-INCURR by May 15 for eventual review and / or approval by the CAO for an August 1 effective date.

Summer

May – July substantial changes as well as any minor changes from the summer term will be presented by discipline faculty to the Faculty Facilitator during the Fall semester Discipline Meetings.

**Appendix G: Assignment Samples for Each Competency**

# General Education Assessment Plan

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## ***G.1: Written Communication Assignment Sample 1***

A primary source is something from the time and place you are studying. To analyze a primary source historically, you need to understand all of the following:

CONTEXT: the historical situation in which the primary source was produced. CONTENT: the major point or meaning of a primary source in its historical context. CONSEQUENCES: the effects or significance of a primary source in history.

Each student must turn in four short written assignments this semester based on your research and interpretation of your choice of documents from The Past Speaks primary source reader. The due dates are outlined on the course calendar.

First, choose a document from The Past Speaks appropriate to the unit of study. I will convey this in each unit's assignments.

For each paper, there must be at least one outside source utilized in order to explain the context in which the document was written. (See above for what context means)

In an essay of at least a page address the following questions to the best of your ability. Do not rewrite the questions in your paper. Answer them in paragraph form using the questions as guidelines.

- 1) Who wrote the document?
- 2) When was the document written? What can the document tell us about society at the time it was written?
- 3) Why was the document written? What sort of function did it serve? Was it perhaps written in response to a particular kind of problem? If you think that it was, what might the problem have been?

Most importantly, how does the document add to the textbook reading of the events surrounding its creation?

- 4) Cite your sources in a separate works cited section. A reader should be able to tell where you are getting your information. Do this with parenthetical references. For example, (Jones, 23). It is better to have too many than too few citations. However, don't quote long passages from the documents. Use an ellipsis "..." if you need to quote.

For a primary source, cite the author of the document, not Jacobson. That is the person who collected the primary source. Consult a style manual for proper citation format or consult me.

***Thanks to Scott Wade for allowing use of this sample.***

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## ***G.2: Written Communication Assignment Sample 2***

### Long Essay and Document Questions

#### **Long Essay**

This question is worth 20 points and the information you need to answer it is from your main textbook, *CREATED EQUAL*, but feel free to use other sources. There is important help in the Study Guide for the First Exam found in the Course Documents folder on the class Blackboard site. Here is the question:

Define “Manifest Destiny.” What was the message of Alfred Thayer Mahan? What was the background situation in Cuba prior to the Spanish American War? What were the reasons we declared war against Spain? What were some of the main battles or turning points...some of the personalities? What were some of the issues after Spain surrendered...especially in the Philippines? What was John Hay’s “Open Door Policy” and what was the cause of the Boxer Rebellion?

Most of the information you need to answer the question above will come from Chapter 18. Be sure you are discussing Manifest Destiny as it pertains to this time period...1898! Feel free to use www sources, as well...BUT...no plagiarizing! List your sources at the end of your Long Essay.

READ ABOUT THE MEMORIAL IN ARLINGTON NATIONAL CEMETERY TO THOSE WHO LOST THEIR LIVES ON THE USS MAINE AT

[http://www.arlingtoncemetery.org/visitor\\_information/USS\\_Maine.html](http://www.arlingtoncemetery.org/visitor_information/USS_Maine.html)

#### **Document Questions**

- 1) Explain the roots or origins of the Progressive Movement by beginning with Grangers and the Alliances and continuing through the formation of the People’s Party (Populism). B. What were some of their demands? C. People also became convinced that the rapid pace of industrialization and urbanization created intolerable problems. The Progressives thought direct, purposeful human intervention in social and economic affairs was essential to ordering and bettering society. What was the optimistic vision of Progressivism? D. What did they want done? E. Who were the progressive reformers and where had they come from? (20 points)
- 2) This is the era of the beginnings of organized labor. What were the conditions that prompted the organization of labor? What were some of the first organizations and who were their organizers? What were their goals? Were they effective? Why or why not? (10

## General Education Assessment Plan

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points)

- 3) By the turn of the century we were a world power with worldwide interests. How did Teddy

Roosevelt see his duty as President and the duty of the US in the world community?

What was his role in the construction of the Panama Canal? What was the Roosevelt

Corollary to the Monroe Doctrine? What were some of his other accomplishments? (10

points)

*Thanks to Jan Mullis for allowing use of this sample.*



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## ***G.3: Written Communication Assignment Sample 3***

### Clinical Case Study

Your answer must be in complete sentences using proper (formal) English and punctuations (no texting lexicons, etc). This paper is for a college level class and should reflect your abilities to communicate relative to the health profession you are about to enter. Do not elaborate too much....between 0.5 – 1 page should be enough for you to answer your questions. You may collaborate and help each other with citations format, etc., however, the work must be yours and in your words....do not plagiarize.

**History of Present Illness:** Ryan is 10 months old and was born at home in a remote part of Montana. Ryan did not have the normal newborn tests that would have been given if he was born at a hospital. Ryan has a very fair complexion; pale skin, blue eyes. Ryan's mother noticed that he has a "mousy" or musty odor to his urine, breath, and sweat. He also has eczema. Ryan seemed to suffer a seizure so his mother decided to take him to a doctor.

**Family History:** Ryan has brother who is mentally retarded.

**Physical Examination:** The pediatrician noticed Ryan had microcephaly. His growth also seemed stunted and the doctor noticed tremors in Ryan's arms and legs.

**Lab results:** Phenylketones were found in Ryan's urine.

### QUESTIONS

Answer the questions below to demonstrate your knowledge. You will have to consult your textbook, reference material and the internet. A good place is a search engine like google.com. Type in the phrase or terms you need more information about and click on the websites. The library has computers you can use to access the internet. Write (or type) the answers to the questions below on your own paper.

**\*\*\*\*\*Write your answers in your own words not just copied from a reference; that is plagiarism!**

\*\*\*\*\*

**\*\*\*\*\*INCLUDE YOUR References/citations!**

\*\*\*\*\*

Use MLA style for citations. Go to the writing center for help or look online if you do not know how to properly cite your source(s). You will have points DEDUCTED if you do not cite your reference(s) properly!

## General Education Assessment Plan

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### **THERE IS ONLY ONE CORRECT DIAGNOSIS!**

**\*\*\*E-Mail me with your evidence and I will tell you if you have the correct diagnosis!\*\*\***

Questions (3 pts per question)

1. What do you think is wrong with Ryan? **EXPLAIN!** How would you determine if your diagnosis was correct, i.e. what test(s) could you do?
2. What “material” is causing the symptoms? What kind of molecule is the “material?”
3. Why does the “material” cause the symptoms? **Be specific!!!** Will it cause the same symptoms in everyone? Explain
4. Can Ryan’s problem be cured? How? If not, explain.
5. How would one get Ryan’s disease? **Be specific!**

*Thanks to Michael Mitchell for allowing use of this sample.*

### ***G.4: Information Literacy Assignment Sample 1***

#### Research Paper

For your individual paper, you will analyze the macro economy of a foreign nation. Upon completion of your research, you will organize findings related to this country's economy, recent changes, relative size, potential issues and challenges, relative strengths, and other key characteristics. At least one graph with

10 or more years of data is required. Multiple graphs and other visual material are encouraged. Be sure to cite all work.

#### **Please make sure your paper includes the following:**

- ❑ The country you are analyzing should be identified and key descriptive information such as current or recent population, population growth, income or income per capita, land area and density, major cities, location, language(s), life expectancy, or other key characteristics you see as important in describing this country should be identified.
- ❑ Key economic characteristics such as the size of the economy, its growth rate, inflation, unemployment, or other important characteristics should be given and compared to a benchmark such as the U.S. or the World.
- ❑ Key descriptions of commerce should be provided. These might include total exports and imports, the trade deficit or surplus, major trading partners, key commodities imported or exported with either the world or the U.S., and other trade factors.
- ❑ Two or more key issues that have either historically shaped the nation or remain significant factors that will face the nation in the future. These might include geopolitical conflict, resource use or scarcity, civil war, technological issues, infrastructure issues, education or health, or many others. Note that this is the largest component of the rubric (below).
- ❑ Your outlook for the country moving forward should be included. This should comprise of a  
broad economic forecast one or more years forward and might include one or more variable such as GDP, population, or others. Your forecast should be supported with well thought out justifications.
- ❑ Include a bibliography with at least 3 sources.

The paper should be between 1,000 to 1,500 words and should include at least one graph (preferably original-unoriginal graphs must be cited) with no less than ten years of time series

## General Education Assessment Plan

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data. Please see me or contact me if you are having difficulty obtaining these data.

Please note that this paper requires more than a simple Wikipedia search. You should compile resources from several sources and write a clear and well organized paper that demonstrates research and comprehension. References to macroeconomic theory should be included. As a warning, any plagiarism will result in heavy penalties on the research paper including a score of zero.

*Thanks to Sean LaCroix for allowing use of this sample.*

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## ***G.5: Information Literacy Assignment Sample 2***

### Long Essay and Document Questions

#### **Long Essay**

This question is worth 20 points and the information you need to answer it is from your main textbook, *CREATED EQUAL*, but feel free to use other sources. There is important help in the Study Guide for the First Exam found in the Course Documents folder on the class Blackboard site. Here is the question:

Define “Manifest Destiny.” What was the message of Alfred Thayer Mahan? What was the background situation in Cuba prior to the Spanish American War? What were the reasons we declared war against Spain? What were some of the main battles or turning points...some of the personalities? What were some of the issues after Spain surrendered...especially in the Philippines? What was John Hay’s “Open Door Policy” and what was the cause of the Boxer Rebellion?

Most of the information you need to answer the question above will come from Chapter 18. Be sure you are discussing Manifest Destiny as it pertains to this time period...1898! Feel free to use www sources, as well...BUT...no plagiarizing! List your sources at the end of your Long Essay.

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[http://www.arlingtoncemetery.org/visitor\\_information/USS\\_Maine.html](http://www.arlingtoncemetery.org/visitor_information/USS_Maine.html)

#### **Document Questions**

- 1) Explain the roots or origins of the Progressive Movement by beginning with Grangers and the Alliances and continuing through the formation of the People’s Party (Populism). B. What were some of their demands? C. People also became convinced that the rapid pace of industrialization and urbanization created intolerable problems. The Progressives thought direct, purposeful human intervention in social and economic affairs was essential to ordering and bettering society. What was the optimistic vision of Progressivism? D. What did they want done? E. Who were the progressive reformers and where had they come from? (20 points)
- 2) This is the era of the beginnings of organized labor. What were the conditions that prompted the organization of labor? What were some of the first organizations and who were their organizers? What were their goals? Were they effective? Why or why not? (10 points)

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3) By the turn of the century we were a world power with worldwide interests. How did Teddy

Roosevelt see his duty as President and the duty of the US in the world community? What was his role in the construction of the Panama Canal? What was the Roosevelt Corollary to the Monroe Doctrine? What were some of his other accomplishments? (10 points)

*Thanks to Jan Mullis for allowing use of this sample.*

### ***G.6: Critical Thinking Assignment Sample 1***

#### Essay

Read Wendell Berry's "Thoughts in the Presence of Fear." Berry argues that no "crisis or emergency can justify any form of political oppression." Take a stand arguing for or against this claim. Think about what your text says, "Are there times when individual freedoms must be sacrificed for the common good? Or does the common good never outweigh the rights of the individual?"

Write and post a rough draft for a 350-500 word essay again using the persuasive essay format discussed in the lecture notes. Be sure to follow the MLA format posted as a sample.

Your partner will post his/her rough draft for you to peer review as well. Read each other's papers and complete the peer review form (found in the Handouts folder) and post it back to the group area and send it to me. You will receive a grade for the peer review as well. Post the Peer Review back to your partner by day's end on April 15, 2013.

After you receive the peer review from your partner, review it carefully. You are welcome to make any of the changes suggested--or not! Remember, it is *your* paper, and you will ultimately want to be satisfied with the paper.

Submit your final, polished and proofread draft to me.

***Thanks to Judith Scharle for allowing use of this sample.***

### ***G.7: Critical Thinking AssignmentSample 2***

#### Midterm Research Projects – Expository Research Paper & Poster

EVERYONE'S written report due on Monday, February 25<sup>th</sup>. NO LATE PAPERS WILL BE ACCEPTED, AND YOU MUST SUBMIT A PAPER TO PASS THE CLASS, AS PER THE SYLLABUS.

In addition, 1/2 of the class will present their accompanying research posters on Monday, February 25<sup>th</sup>. The other 1/2 will present their accompanying research posters on Wednesday, February 27<sup>th</sup>. First come, first served in terms of signing up to do your poster one of those two classes. You can notify me of your preferences by e-mail.

Attendance/participation points worth a test grade on both of these days. (On Friday, March 1<sup>st</sup>, we will **not** meet as a class; you will have an independent assignment to complete elsewhere on your own instead.)

1<sup>st</sup> person – NO!\* (I, me, my, we, us, our, ours, etc.)

2<sup>nd</sup> person – NO!\* (you, your, yours, etc.)

3<sup>rd</sup> person – YES! (he, she, it, his, her, hers, its, they, them, theirs, etc.)

\*unless used in a quotation

APA format (6<sup>th</sup> ed.) required

APA cover page required

APA references page required

5 page minimum (not including cover page and references page)

10 page maximum (not including cover page and references page)

Primary research – bonus points

Secondary research – mandatory\*\*

Tertiary research – not allowed unless I specifically agree to a source

\*\*Minimum of five scholarly sources; at least one must be a traditional print source (no ebooks, electronic databases, etc. for that one)

### **RESEARCH PROSPECTUS INSTRUCTIONS**

You are welcome to change this prospectus as necessary during the research project, but please note that you **MUST** submit a new draft detailing those changes to me each time if you do. Part of your grade will be based on my comparing the final research paper to the research prospectus, so it is to your advantage to redo your prospectus and resubmit it if you make changes. Please feel free to visit me during my office hours if you are having trouble at any stage.



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Save this document as a file, and type your information into it. Do NOT remove the original questions/text from it. Save in [www.dropbox.com](http://www.dropbox.com) and print a copy to submit to me. I will keep a copy of these on file.

1. Working title for your research paper:
2. Research topic focus (may not be clear from working title):
3. Guiding question for research topic focus:
4. Why/how did you choose your overall topic?
5. Why, in your opinion, is it worth researching?
6. In addition to the introduction and the conclusion, what sections do you anticipate your paper having? Please be as specific as you can regarding number and subtopics of these sections.
7. Would scholarly sources be available on this topic? (If not, get a new one!!!) List possible academic disciplines/professional fields that would be concerned with this topic.
8. Please detail the sources of the preliminary research you have already done on this topic.
9. Do you anticipate any problem areas or difficulties with this research? If so, be specific about what they are and how you plan to address them.
10. Working backwards from the due date, plan a schedule of tasks you need to complete between now and then to get this research project done. Consider primary research, secondary research, drafting, revising, incorporating citations, editing & proofreading, and creating the accompanying presentation product. Specify time you anticipate spending on each task.

***Thanks to Lynnette Brash for allowing use of this sample.***

## ***G.8: Quantitative Reasoning Assignment Sample 1***

Group  
Project

Does square footage determine home prices?

Directions:

Your group will be assigned 3 zip codes to get home data from the Zillow.com website. You will use data on homes that are currently FOR SALE – choose the FOR SALE link and enter in the zip code. For each zip code you will need to choose 25 pairs (square footage, home price) of data. Each “pair” is one house where the square footage (x) and home price (y) make up your data. You will also need to determine a sampling technique on how you’ve chosen your data. In your write-up you need to address what sampling technique your group has chosen and why you chose that particular technique.

Each group will turn in a single report 9in Word format, all charts must be pasted into the Word file) addressing the following questions and calculations that are outlined in the Data Analysis section below. Your data analysis is not limited to the questions and calculations listed below. Your group is free to include additional analysis where appropriate.

### DATA ANALYSIS:

- ❑ Create separate scatter plots for each of the three data sets. You may wish to use Excel to create your scatter plots; you may use whatever software you wish as long as you are able to copy and paste (or import) into Word.)
- ❑ Determine the regression equation and show the equation on each of the scatter plots.

### NOTE:

charts need to be clearly labeled with a title.

- ❑ Interpret the meaning of the slope coefficient in the problem.
- ❑ Determine the correlation coefficient for each of the data sets.
- ❑ An explanation of the sampling techniques that was used and why it was chosen.
- ❑ What level of measurement (nominal, ordinal, interval or ratio) does the data possess?
- ❑ Does the pattern of the scatter plot roughly follow a straight line and does the visual repress
- ❑ Is the data pattern upward or downward sloping?
- ❑ Are the data values tightly clustered in the pattern or widely dispersed?
- ❑ Are there any significant deviations from the pattern? Why might this have happened?
- ❑ Which data values are your independent values? Which data values are your dependent values?
- ❑ Predict the price of a 2,000 square foot house based on each of the three regression models.
- ❑ Compare the regression models of your 3 zip codes? Are the results similar/different? Are there other pieces of home data that were not included in our regression analysis that may have influenced the results?

## General Education Assessment Plan

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### NOTE:

Each group will choose a group leader. The group leader will receive 5 additional points on their project. Only the names of the group members that the group leader submits on the final report will receive a grade on this project (list them on the cover page of the report). If the group leader determines that you have not contributed on this project and does not submit your grade then you will receive a zero. The team leader must submit the report on the MML discussion board as FINAL DRAFT.

*Thanks to Robert Williams for allowing use of this sample.*

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## ***G.9: Quantitative Reasoning Assignment Sample 2***

### Radiation Field Survey Project

Instrument Needed: Ionization Chamber

Operation Mode: mR/h (operation as a rate meter in mR per hour)  
Radiology Area: Fluoroscopy

#### Instructions

1. Inform the Radiologist, supervisor and technologist in advance that you will be obtaining radiation measurements during the procedure,. And obtain permission.
2. Choose an exam where the technologist does not need your assistance, or where another student is available to assist with the fluoro procedure. You should be an extra person in the room where you would not be expected or needed to assist the radiologist or patient.
3. Wear a lead apron with your dosimeter outside the apron. Have a set of lead gloves available.
4. It may be necessary to obtain your readings over the course of several different fluoro studies in order to get them all. You should not ask the radiologist to alter the exam at all to accommodate your assignment.
5. Meter Operation:

Press the power switch located on the right side of the screen. Allow the meter to initialize. This process takes less than a minute. It is done when the bar meter stops reading close to zero. The meter should default to mR/h and begin to read. The numbers will fluctuate as the meter reads the radiation rate in mR/hour. To obtain your readings hold the meter upright, with the black bottom facing the radiation source. Record your readings as indicated below.

6. Hold the meter, and obtain readings at the following locations during the beam-on time of the fluoroscopic operation:
  - A. 1. Approximately 2 feet at a right angle to the protective lead curtain of the fluoroscope (see diagram)  
  
mR/hour
  2. Approximately 4 feet at a right angle to the protective lead curtain of the fluoroscope \*see diagram)  
  
mR/hour

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3. Approximately 6 feet at a right angle to the protective lead curtain of the fluoroscope (see diagram)

mR/hour

4. Approximately 8 feet at a right angle to the protective lead curtain of the fluoroscope \*see diagram

mR/hour

- B. 1. Approximately 2 feet at a 45 degree angle to the protective lead curtain of the fluoroscope (see diagram)

mR/hour

2. Approximately 4 feet at a 45 degree angle to the protective lead curtain of the fluoroscope (see diagram)

mR/hour

3. Approximately 6 feet at a 45 degree angle to the protective lead curtain of the fluoroscope (see diagram)

mR/hour

4. Approximately 8 feet at a 45 degree angle to the protective lead curtain of the fluoroscope (see diagram)

mR/hour

- C. Place the meter (don't hold it) on the x-ray table in the following locations:

1. At the far foot of table:
2. At the far head of table:
3. Hold the meter and step back approximately 2 feet from the foot of the table and measure:
4. Hold the meter and step back approximately 2 feet from the head of the table and measure

- D. 1. Stand behind the radiologist and see if you get a reading:

- E. While wearing a lead glove, step behind the control panel (protective booth), and obtain a reading while holding the meter in the following locations:

1. Well behind the protective booth:

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2. Just outside of the protective booth with a lead gloved hand:
3. Record the KVP of tube operation:
4. Record the mA of tube operation:
5. Patient Size

(small/average/large):

Questions

Each student in the group should answer the following questions individually and submit an individual paper.

Discuss your findings, and the implications for the various distances and locations measured. Relate it to the inverse square law.

As the distance increased by 2 feet, the intensity of the radiation decreased by approximately one quarter ( $1/4$ ).

Compare how the scatter coming from the patient (extended source) differs from radiation being emitted from a point source such as the x-ray tube. Does scatter coming from the patient follow the inverse square law in how the intensity changes at different distances. Why or why not?

According to the classic inverse square law, if the exposure was 60 mR/hour at a distance of 2 feet, what should it be at 4 feet?

Where is the safest place to stand during a fluoroscopic study? What physical factors contribute to this being the safest?

Where is the least safest place to stand during a fluoroscopic study? What physical factors contribute to this being the least safe? (exclude the control panel area)

***Thanks to Kim Utley for allowing use of this sample.***

## ***G.10: Scientific Reasoning Assignment Sample 1***

### Animal Research Assignment

This writing assignment is designed to measure your scientific reasoning skills developed while studying General Biology at TCC. You will make observations from viewing video footage of selected animal behavior from natural settings. These observations will be used to pose an (A) argument, provide a topic of existing (B) research to study, create or suggest a possible (C) methodology to test your argument, (D) analyze your findings, and draw (E) conclusions based on your study. These parameters (A-E) are detailed in the scientific reasoning rubric provided or discussed.

#### A.Argument or Topic Selection (15%):

Based on your observations of selected animals from designated video footage, present an argument describing and relating the animal's observed behavior with the type of habitat and adapted characteristics this type of animal possesses.

#### **Example from Lionfish Video:**

- ❑ Lionfish on coral reefs are secondary consumers and the adaptation of poisonous spines reduce predators and the need for dynamic swimming features.

#### B.Existing Knowledge, research, and/or views (25%):

Cite published research detailing the structural characteristics from the selected animal's phylum and class.

#### **Example:**

- ❑ Lionfish taxonomy: Teleost (ray-finned bony fish) – Class Osteichthyes (bony fish) – Superclass Pisces (fish) – Phylum Chordata (chordates)
- ❑ Lionfish characteristics: Ray-finned (bones in fins), scaled, camouflage, caudal fin for propulsion, terminal mouth position, poisonous spines, swim bladder (neutrally buoyant), nektonic
- ❑ Bilateral, complete gut, deuterostome, coelomate, cephalized, segmented, organ systems
- ❑ Cite (author, date)



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How does this information support your argument based on your initial observations and how is this knowledge presented scientifically or non-scientifically?

### Example:

- ❑ Fins and swim bladder allow for free-swimming (nekton) in water column, slow swimming Lionfish protected by numerous poisonous spines (defense), camouflage blends in with reef background, terminal mouth on nektonic fish found in predatorial, secondary consumers of smaller fish
- ❑ Cite (author, date)

### C. Methodology (15%):

What methods were, or could be, employed to prove your assumptions about the reasons these animals adapted their unique traits and characteristics?

### Example:

- ❑ Lionfish observations in aquarium, introduction of other fish consumers to test success of poisonous spines as defensive deterrent, present different food sources to determine food selection
- ❑ Cite (author, date)

### D. Analysis (15%):

Describe how the animal's particular adaptations or characteristics were derived from their ancestry and environment using deduction, induction and analogy.

Deduction – reasoned conclusions

Induction – reasoning from particular instances to a general conclusion

Analogy – similarity between unlike things

### Example:

- ❑ It can be deduced that coloration patterns of the lionfish allow blending in with patterns present in reef community – dark coloration and striping is analogous to corals coloration and calcareous skeletons
- ❑ Using induction, a comparison of fish and lionfish ancestors with terminal mouth patterns generally feed on similar fish prey size and type
- ❑ Cite (author, date)

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### E. Conclusions (15%):

State a conclusion based on your inquiries from observations and scientific literature, distinguishing causal and correlational relationships in your findings.

Causal – something that brings about a result

Correlational – showing a connection between

#### Example:

- ❑ Based on comparisons of fish types, the location of a terminal mouth compared to superior or inferior mouth position affects the food/fish selection in these fish consumers and represents a causal relationship.
- ❑ The presence of lionfish in hard substrate or coral reef environments where camouflage and poisonous spines are an adaptational advantage is a correlational relationship between animal and habitat. Lionfish, however, are not common in environments without substrate and coral reef's presence.
- ❑ Cite (author, date)

### Literature Cited (15%)

- ❑ See provided format

#### **Research Paper Parameters:**

- ❑ Title page – Selected group and 1 line stating Topic or Argument
- ❑ 2 full-page, double-spaced typed research paper
- ❑ Use the National Geographic website <http://video.nationalgeographic.com/video/animals/> to make video animal observations of your selected animal group
- ❑ 2 scientific sources are required in addition to the website (National Geographic, 2013) and textbook (Hoefnagels, 2012)
- ❑ Literature Cited section must be included in research paper (must cite literature in the body of the paper) – (author, date) MLA format

Example for website citations:

Author, last name first. "Webpage title." *Website title*. Date published/updated. Organization/publisher. Date accessed. < URL >

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### Example:

“National Geographic Featured Animal Videos.” National Geographic. 1996-2013.  
National Geographic Society. 8 February 2013,  
<http://video.nationalgeographic.com/video/animals/>

- ❓ If not own words or knowledge, sources must be cited within paper - Quotations must be used for direct quotes

\*\*\*Not citing sources in the body of the paper and not listing sources in the literature cited is a cheating offense (plagiarism) and the paper will not receive credit.

Animal Groups Available on National Geographic Website for Selection

Check Selected Animal Group Topics and Write Name Next to Group

### Amphibians

- o Frogs and Toads
- o Salamanders

### Birds

- o Birds of Prey
- o Waders and Waterfowl
- o Parrots and Hummingbirds
- o Seabirds
- o Penguins
- o Ground Birds
- o Perching Birds
- o Woodpeckers

### Bugs

- o Spiders/Scorpions
- o Ants and Termites
- o Bees and Wasps
- o Butterflies, Moths
- o Other Bugs (mites, etc.)

### Fish

- o Bony fish

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- o Sharks and Rays
- o Spiny-rayed fish
- o Other fish (eel etc.)

### Invertebrates

- o Crabs, Lobster, Shrimp
- o Octopus and Squid
- o Other Invertebrates (Man-O- War, etc.)

### Mammals

- o Cats
- o Bears and Pandas
- o Seals and Manatees
- o Apes
- o Hippos. Rhinos, Tapirs
- o Monkey and Lemurs
- o Whales
- o Dolphins and Porpoises
- o Elephants
- o Dogs, Wolves, Foxes
- o Cattle, Sheep and Goats
- o Kangaroo, Koalas and More
- o Rodents and Rabbits
- o Bats
- o Zebras, Horses, Camels
- o Giraffes and Okapi o Deer and Antelope o Other Mammals
- o Otters and Meerkats

### Reptiles

- o Snakes
- o Lizards
- o Alligators and Crocodiles
- o Turtles and Tortoises

***Thanks to a faculty member, who does not wish to be identified,  
for allowing use of this sample.***

### ***G.11: Oral Communication Sample Assignment Sample 1***

After completing this assignment you will be able to organize and write an informative presentation, use a visual aid to enhance a main point, and cite sources orally in a speech. You are required to use at least 3 oral citations in the speech. Topic needs to be audience centered; be 5 - 7 minutes in length; two or three main points that focus on what the audience will learn from your speech. At least one visual aid is used in the body of the speech as a piece of supporting material.

***Thanks to Diane Ryan for allowing use of this sample.***

### ***G.12: Cultural and Social Understanding Sample Assignment Sample 1***

#### **Portfolio**

Over the course of the semester, you will explore six different central topics, aimed at enhancing social and cultural understanding. You will write an original Paper on each of the six different central topics, in most cases with research. To help you explore these topics, I have identified relevant course materials and developed questions. By the end of the semester, you will have a Portfolio (a collection of six papers) that explores the course content and social and cultural understanding.

Each Portfolio Paper must be a **minimum of 2 pages, typed, 12 point font, double-spaced, with 1 inch margins** all around. You must include references from a minimum of two course readings per paper for Parts II - VI. **Works Cited page is required. Use MLA format:** class material must be clearly identified and all references to outside print, broadcast, or online material must be appropriately cited both within the text and in a works cited page. Note: Wikipedia is not an appropriate source for your papers.

#### **Portfolio Tips:**

**Getting Started:** Read the Portfolio Assignment Description before reading relevant course materials. Take notes as you are reading. Review assignment description, after you complete your reading. Establish your paper's original title. Develop a central thesis or main point for each paper. To explain your thesis or main idea, answer the questions provided in the assignment descriptions. Use the relevant course materials listed to support the explanation of your thesis and consider using additional support, such as personal experience and additional research, to help you explain your thesis. A paper has the following parts: an original title, introduction, thesis, body with course material, conclusion, and Works Cited page.

There are several ways to approach the portfolio papers **in addition to course material**, including:

1. Using the word "I" is appropriate, i.e. using personal experiences that relate to class material.
2. Magazine, newspaper, or other media stories that relate to class material.
3. Material from other classes that relate to our class material.
4. Comparison/contrast of topics, articles, or other class material.

#### **Example Structure or Outline of Portfolio:**

- 1) **Original Title:** \_\_\_\_\_
- 2) **Introduction** (brief):
  - a) Engage reader
  - b) Inform reader of topic/key definitions
  - c) Thesis or main point
- 3) **Body:**
  - a) Explanation of thesis or main point
  - b) Course Material #1
  - c) Course Material #2
- 4) **Conclusion:**
  - a) Summary of paper
  - b) Restatement of thesis
  - c) Lasting thoughts for reader
- 5) **Works Cited:**
  - a) Course Material #1
  - b) Course Material #2

### **Part II: Social Institutions Paper**

**Central Topic:** The role of government, a social institution, on individuals, communities, and women

**Objective:** To assess the impact that social institutions have on individuals and culture—past, present, and future.

**Relevant Course Materials:** *History and Patriarchy* and *Feminism* \*\*note: must include at least two references

**Answer these questions:**

- How has the government shaped your life in the past and present? Your community?
- How has the government shaped the lives of women – past and present?
- What role do you think the government will play in the future for the lives of women? You?  
Your community?

*Thanks to Laura Soulsby for allowing use of this sample.*



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### ***G.13: Personal Development Sample Assignment Sample 1***

Journal Entry	Identify three strategies you will use to maintain a healthy lifestyle. Include in your discussion how you will achieve your personal wellness goals.	3/1/14
Career Essay	<p style="text-align: center;"><b>CAREER ASSIGNMENT</b></p> <p><b>Due Date:</b> _____</p> <p>Investigate the career that you plan to pursue, or a career that might interest you, <b>utilize all available resources</b>.</p> <p><b><i>Complete a minimum one-page, typed paper (double spaced) in essay format answering the following questions:</i></b></p> <ul style="list-style-type: none"> <li>• What career did you choose and why?</li> <li>• What is the salary range of the career that you have chosen? Does it fit your projected lifestyle?</li> <li>• How much education is needed for this career?</li> <li>• What are some of the requirements for this career?</li> <li>• What is the employment outlook for this career?</li> <li>• If for some reason this career did not work out, what other types of careers would you like to pursue?</li> </ul> <p><b><i>Note: You will lose points if you do not write in essay format and if you do not answer all the questions.</i></b></p> <p style="text-align: center;"><b>LATE WORK WILL NOT BE ACCEPTED!</b></p>	3/1/14

***Thanks to Karen Campbell for allowing use of this sample.***