



# GENERAL EDUCATION OUTCOMES ASSESSMENT

## PHILOSOPHY FOR ASSESSMENT OF STUDENT LEARNING OUTCOMES

Calhoun Community College first discussed the need to adopt and assess student learning outcomes in the general education core as a result of accreditation requirements. However, the Instructional Council recognized the value of assessing general skills in Calhoun students and engaged the concept of assessing learning outcomes as an indicator of overall student achievement.

It's important to note that the institution uses assessment of learning outcomes strictly as a student-based assessment. The results of the assessments are **not** used to evaluate faculty. In some cases, the results of assessment have prompted changes in instructional methods and approaches, but these changes are prompted by the academic departments or individual faculty member. Results of learning outcomes assessments are not used to evaluate the teaching effectiveness. Faculty evaluation at Calhoun is conducted on a regular basis according to guidelines published in the Employee Handbook. Results of student achievement in learning outcomes are not part of that evaluation process.

## HISTORY OF LEARNING OUTCOMES

### Adoption of Outcomes

In August, 2006, Calhoun Community College contracted with Dr. Rose Mince to conduct a workshop regarding assessment of general education learning outcomes for instructional leadership. In January, 2007, the Administration of Calhoun assigned an assessment associate the task of identifying general education learning outcomes for all Calhoun graduates and for developing a plan for assessing whether students had achieved those outcomes. Approximately 52 full-time faculty were involved in the process of developing outcomes specific to the curriculum of Calhoun. After some revision, the following outcomes were affirmed in August 2007:

- **Critical Thinking Skills** – students will be able to interpret information, respond and adapt to changing situations, make complex decisions, solve problems, and evaluate actions.
- **Quantitative Reasoning** – Students will be able to identify, analyze, generalize and communicate quantitative relationships. Students will be able to perform tasks that require mathematical skills and solve problems using algebra(ic) concepts.
- **Scientific Reasoning** – Students will be able to reason inductively and deductively and be able to hypothesize and evaluate hypotheses empirically.
- **Information and Computer Literacy** – Students will demonstrate basic computer skills and the ability to access, select, evaluate and use information resources.
- **Communication Skills** – Students will be able to speak and write clearly.
- **Cultural Diversity Skills** – Students will demonstrate knowledge of the impact of cultural literacy in the arts and humanities and the chronological history of our society. Students will demonstrate an understanding of skills needed to live and work in a culturally diverse world.

A General Education Learning Outcomes Committee was formed in August 2007 to adopt a plan for measuring student attainment of these outcomes. The Committee adopted the Plan for Assessing General Learning Outcomes (Attachment A) and the Instructional Rubric for Assessing General Education Outcomes (Attachment B). The College contracted with Dr. Terri Manning in September 2007 to help finalize plans adopted by the Committee. The adopted plan identified seven courses in which common assessments would be used to measure student attainment of the adopted outcomes.

The following describe the various activities departments adopted to measure student attainment:

#### **Information and Computer Literacy – Measured in CIS 146 Courses**

The CIS faculty originally adapted a project already used in the CIS 146 course to meet the needs for assessment of information and computer literacy skills for general education outcomes assessment. The project involved using word processing, presentation, spreadsheet, and analysis software to analyze runner times based on sex, age, and national origin. Students performed research and presented their results to determine which countries produce the most successful athletes. After considering the project more carefully, the faculty decided to focus on the application of a Microsoft Word skills-based test to better target the need to assess whether students could manipulate text, images, and data as defined in the General Education Rubric. Consequently, the faculty adopted a 25-question objective test to be administered in all CIS 146 courses as a pilot for Spring 2008. (Attachment C)

#### **Critical Thinking Skills – Measured in SOC 200 Courses**

The sociology faculty developed an exercise which requires students to measure the socioeconomic status of a person based on combined measures of education, occupational prestige and income. The faculty determined that the exercise measured quantitative skills, scientific reasoning, diversity, and critical thinking. For reporting purposes, the results are recorded for critical thinking. Students were given operational definitions for three variables and instructed to use the variables to calculate Socioeconomic Status (SES). To measure the students' understanding of SES, they were asked complete five test items related to understanding the calculation. The adopted exercise ensures that students know how to apply their knowledge of SES to very practice examples to which they could relate. (Attachment D)

#### **Scientific Reasoning Skills – Measured in BIO 103 Courses**

The Biology faculty developed a series of five common exam questions to which all students taking BIO 103 would respond. The questions allow students to identify the components of scientific reasoning and apply those components when presented with novel situations. The scientific method is taught in BIO 103 as the proper way to isolate variable factors, control for them, and reach logical, data-supported conclusions. Students responded to five scenario-based questions to display knowledge of the common elements of the scientific method to develop a hypothesis for the relationship between the drug, AtatudeAdjustin used for depression and the treatment of acne. In doing so, students demonstrate an understanding of the common elements of the scientific method by identifying the insight or observation step in a hypothetical scenario, identifying the tested hypothesis of the scenario, identifying the experimental control in the scenario, drawing a conclusion based on scenario results, and formulating a second hypothesis for further testing. (Attachment E)

#### **Communication Skills – Measured in ENG 102 Courses**

The English faculty developed a series of common assessment questions embedded in each section of the ENG 102 course. The questions assess students' skills in organizing thoughts and identifying mechanical errors in work entitled, "Othello as a Tragic Hero." Students are asked to identify thesis statements and topic sentences, identify reasonable support for ideas through facts, statistics, inferences, and expert testimony, identify the introduction, body, and conclusion paragraphs, identify appropriate citation of sources in text and a works cited list, and identify errors in grammar and punctuation. (Attachment F)

#### **Quantitative Analysis Skills – Measured in MTH 112 Courses**

The Math faculty developed a scenario-based problem to be administered to each student in each section of the MTH 112 course. The problem was piloted in one section (106) of MTH 112 in Fall 2007 with 29 students. The math problem was designed to allow students to apply their quantitative skills in solving a basic, "everyday life" situation. The scenario-based problem asked students to apply their knowledge of linear equations to estimate projections on cost and revenue for a company. Specifically, students were asked the following question, "What is the cost function of this company in terms of its unit and fixed cost?" Students were instructed to graph the results. A rubric for scoring the problem was developed by the math faculty in conjunction with the adopted college-wide General Education Rubric. (Attachment G)

### **Cultural Diversity Skills – Measured in HIS 201 Courses**

The History faculty developed a set of five common test questions to be administered to all students taking the HIS 201 course. The tests questions were administered during the third examination period and were designed to measure the student's knowledge of cultural diversity and how it enhances the human experience. The faculty adopted the five selected questions because of their relevance to both mainstream and non-mainstream American cultures. The faculty adopted a scoring plan consistent with the General Education Rubric. (Attachment H)

### **All General Education Skills – Measured in ECO 231 Courses**

The Economics faculty adopted a common 35-question multiple choice test in the ECO 231 course which addresses each of the general education learning outcomes. The faculty adopted an online test that students were asked to take during the week of December 7-12, 2007. Students were instructed they should take the test only once and that any additional attempts to take the test would not be scored. Students logged on to the test by using their seven-digit Calhoun ID number and their ECO 231 section number. All faculty used the students' scores to contribute to 5% of the overall course grade. The General Education outcomes of Critical Thinking, Cultural Literacy, Quantitative Skills, Scientific Reasoning, and Diversity were assessed through the online testing method, and the outcomes of Communication Skills and Information and Computer Literacy were assessed by individual faculty members using a class activity and the common rubric adopted by the College. (Attachment I)

The following table depicts the test items and the corresponding General Education Outcome they address:

<b>ECO 231 TEST ITEMS</b>	<b>GENERAL EDUCATION OUTCOME ASSESSED</b>
Items 41 through 43	Critical Thinking
Items 44 through 46	Cultural Literacy
Items 47 through 49	Quantitative Skills
Items 50 through 52	Scientific Reasoning
Items 53 through 55	Diversity
Instructor Determined Activity	Communication Skills
Instructor Determined Activity	Information and Computer Literacy

## **RESULTS OF PILOT PHASE – FALL 2007**

### **Information and Computer Literacy – Measured in CIS 146 Courses**

As a result of the change made in the CIS assessment, no results were available for the Fall 2007 semester. The CIS faculty will pilot the adopted objective-type WORD test in Spring 2008, and data will be shared in the Fall 2008 report.

### **Critical Thinking Skills – Measured in SOC 200 Courses**

The Sociology faculty coordinated their data collection through Carol Chenault. During the Fall 2007 semester, two lecture-based classes were used to pilot the instrument because the classes were being taught by the faculty member involved in developing the exercise. In HIS 201, Section 100, 36 students were assessed, and in Section 101, 37 students were assessed. The General Education Rubric was amended to allow a 6-point scoring scale. The following table presents the results:

<b>HIS 201 Section</b>	<b>Mean Score on 6-point Scale</b>
100	4.94
101	4.97

### Cultural Diversity Skills – Measured in HIS 201 Courses

Gene Barnett agreed to coordinate the data collection for the History 201 course measuring the cultural diversity outcome. During Fall 2007, two sections were used to pilot the assessment instrument. A total of 58 students, including 29 from each section, completed the non-punitive, five-question assessment. The following table summarizes their performance.

POINTS ON RUBRIC	NUMBER OF STUDENTS	PERCENTAGE
Four	10	17%
Three	42	73%
Two	3	5%
One	3	5%

The overall mean score for the 39 students assessed was 3.02.

### Scientific Reasoning Skills – Measured in BIO 103 Courses

The Science faculty elected Jimmy Duke, John Russell, and Emily Whittier as the internal committee to collect and report data regarding assessment of scientific reasoning skills. During the Fall 2007 semester, 307 students were assessed in eight sections of BIO 103. As stated above, five items were used to assess the student's ability to use the scientific method to arrive at the correct answer to a hypothetical situation. The goal set by the department was that 70% of the assessed students (215) should answer each item correctly, or receive a score of "4" on the General Education Rubric. Aggregate results of all students reveal that the students failed to achieve that goal on each item. The following table reveals those results:

Score	Item 1	Item 2	Item 3	Item 4	Item 5
4	181	35	59	48	74
3	54	148	119	82	56
2	17	51	17	107	44
1	54	72	111	69	128
0	1	1	1	1	5

The average score (aggregate) for each item reveals the same results – as the difficulty of the item increased and more critical thinking was required the worse the average score. The table below shows the average score for each item:

	Item 1	Item 2	Item 3	Item 4	Item 5	Total:
<b>Average</b>	<b>3.17</b>	<b>2.47</b>	<b>2.40</b>	<b>2.35</b>	<b>2.21</b>	<b>12.38</b>
<b>N =</b>	<b>307</b>	<b>307</b>	<b>307</b>	<b>307</b>	<b>303</b>	<b>307</b>

### Communication Skills – Measured in ENG 102 Courses

The English faculty elected Sheila Byrd, Jill Chadwick, and Leigh Ann Rhea as the internal committee to collect and report data regarding student assessment of communication skills. During the Fall 2007 semester, 179 students were assessed in nine sections of ENG 102. As stated above, a 24-item common test was administered to each student in the nine sections. The faculty applied the General Education Rubric to score the 24 items according to the following scale:

Number of Items Answered Correctly	Corresponding Rating on the General Education Rubric
0 – 6	1
7 – 13	2
14 – 20	3
21 – 24	4

Aggregate results were reported by site and reveal the following:

Site of Testing	Average Score
Huntsville Site	3.275
Dual Enrollment	3.6
Distance Education	3.4
Decatur Day	3.6
Evening	N/A

### Quantitative Analysis Skills – Measured in MTH 112 Courses

Twenty-nine students were used to pilot the problems-based scenario adopted by the Math faculty to assess the General Education Learning Outcome of Quantitative Analysis. Of the 29 students, only one achieved a rating of 4 (completely correct) on the scoring rubric. Two students scored a 3, (50% of the problem solved correctly). Students receiving a 3 were able to solve the problem correctly, but did not use the logical approach in solving it. Twenty-six students received a score of 1 (attempted but did not solve the problem).

### All General Education Skills – Measured in ECO 231 Courses

Faculty members Jim Payne and Derek Berry assumed responsibility for collecting the ECO 231 data relative to general education learning outcomes. Mr. Payne and Mr. Berry also served on a course redesign team supported by a Title III Strengthening Institutions grant and devised their general education outcomes assessment in a similar format to that assessing the effectiveness of course redesign. For the Fall 2007 semester, 224 students were assessed in Communication Skills and Information and Computer Literacy, while 197 students were assessed in the remaining General Education Learning Outcomes. The sizes of the populations differ because results for outcomes 1 and 4 were not reported for some sections, and some students did not participate in the online evaluation.

The following table shows the results of the testing:

Fall 2007 ECO 231 General Education Posttest Matrix															
		1		2		3		4		5		6		7	
Outcome		Communi- cation Skills		Critical Thinking		Cultural Literacy		Info and Computer Literacy		Quantitative Skills		Scientific Reasoning		Diversity	
Rat- ting		<i>f</i>	%	<i>f</i>	%	<i>f</i>	%	<i>f</i>	%	<i>f</i>	%	<i>f</i>	%	<i>f</i>	%
	4	Excellent	69	30.8	83	42.1	46	23.4	86	38.4	34	17.3	33	16.8	24
3	Good	90	40.2	92	46.7	92	46.7	88	39.3	81	41.1	115	58.4	81	41.1
2	Fair	45	20.1	17	8.6	46	23.4	35	15.6	54	27.4	36	18.3	71	36.0
1	Poor	20	8.9	5	2.5	13	6.6	15	6.7	28	14.2	13	6.6	21	10.7
	TOTAL	224	100	197	100	197	100	224	100	197	100	197	100	197	100
	Scoring 3 or higher	159	71	175	88.8	138	70.1	174	77.7	115	58.4	148	75.1	105	53.3

## USE OF ANALYSIS FOR IMPROVEMENT

In each instance, the instructors in the various classes received their students' results along with the aggregated results of the department. Instructors studied their results and revised teaching methods and approaches where appropriate.

Specifically, these changes were noted:

**MTH 112** – After analyzing results of the pilot assessment, the Math faculty have revised the problem to include basic formulas that can be used to work the problem. While the faculty was adamant in their quest to determine whether students could apply the quantitative analysis skills they learned in Math 112 to solve “every day life situations” requiring mathematical application. However, the faculty also noted that given the basic formula, most students would be able to apply it. The math faculty will use the amended problem college-wide beginning Spring 2008.

**ENG 102** – the English faculty noted that assessment results indicated students had a general understanding of communication skills required for successful writing. They do not plan to make any changes to the assessment tool and will continue assessment through Spring 2008.

**BIO 201** – The Biology faculty determined that 44.8% of their students assessed were successful. The faculty plan to evaluate the rubric used to score the Spring 2007 results and ensure it reflects the concepts adopted in the college-wide rubric.

**HIS 201** – the History faculty determined that initial results suggest that Calhoun students demonstrate an above average appreciation of the significance of cultural diversity in American society, since 90 percent of the students who participated scored a three or higher on the rubric.

**ATTACHMENT A**

**Calhoun Community College**

**PLAN FOR ASSESSING GENERAL EDUCATION  
LEARNING OUTCOMES**

**ATTACHMENT B**

**Calhoun Community College**

**RUBRIC FOR ASSESSING GENERAL EDUCATION  
LEARNING OUTCOMES**

**ATTACHMENT C**

**Calhoun Community College**

**CIS 146 ASSESSMENT OF COMPUTER AND  
INFORMATION LITERACY SKILLS**

**ATTACHMENT D**

**Calhoun Community College**

**SOC 200 ASSESSMENT OF CRITICAL THINKING**

**ATTACHMENT E**

**Calhoun Community College**

**BIO 103 ASSESSMENT OF SCIENTIFIC  
REASONING**

**ATTACHMENT F**

**Calhoun Community College**

**ENG 102 ASSESSMENT OF COMMUNICATION  
SKILLS**

**ATTACHMENT G**

**Calhoun Community College**

**MTH 112 ASSESSMENT OF QUANTITATIVE  
ANALYSIS SKILLS**

**ATTACHMENT H**

**Calhoun Community College**

**HIS 201 ASSESSMENT OF CULTURAL DIVERSITY  
SKILLS**

# ATTACHMENT I

Calhoun Community College

ECO 231 ASSESSMENT OF ALL GENERAL  
EDUCATION SKILLS