Assessment Plan
Application of Basic Concepts and Tools (Computing and Mathematics)
9/28/2010

1. Student Learning Outcome (SLO a):

"Be able to apply knowledge of computing and mathematics appropriate to the discipline."

2. Method(s) of Assessment:

A linear process model with five phases was used to assess the SLO above. The following faculty members are currently involved in this assessment: Son Pham and Rick Covington for COMP 122, Robert McIlhenny for COMP 222, and Jack Alanen and Peter Gabrovsky for COMP 322. The test consisted of 7 fill-in-the-blank and 14 true/false questions, with one of the fill-in-the-blank questions eliminated due to ambiguity. The following are the five phases of the assessment process:

1. Develop assessment test questions.
2. Develop scoring rubrics for assessing the learning outcome.
3. Conduct the assessment test at the end of the Spring 2009 semester in COMP 424.
4. Analyze the results.
5. Produce an assessment report.

3. Results of the Assessment:

Before conducting the assessment test, scoring rubrics were established as follows:

- Unacceptable (0-8): Evidence that the student has mastered this learning objective is not provided, unconvincing, or very incomplete.
- Marginal (9-11): Evidence that the student has mastered this objective is provided, but is weak or incomplete.
- Adequate (12-14): Evidence shows that the student has generally attained this objective.
- Excellent (15-20): Evidence demonstrates that the student has mastered this objective at a high level.

4. Analysis of the Assessment Results:

The results were calculated and categorized according to the stated rubrics (Appendix, section 4). The results were then categorized in terms of the demographic questions and grouped according to the stated rubrics to see if certain patterns emerged (Appendix, section 6.1). Questions on which a significant number of students answered wrong were isolated and measured (Section 6.2).

It was determined that students in general performed *adequately*.

5. Recommendations for Action/Changes:

5.1. Should this assessment activity be repeated? If so, when?

It was concluded in the previous review that this assessment activity should be repeated. The administered exam was modified based on feedback from the previous exam administered during the Spring 2007 semester, where students in general performed *marginally*. The previous exam consisted solely of questions from COMP 222, and was considered quite ambiguous. A decision was made to incorporate questions from COMP 122 and COMP 322 as well. Other modifications included the clarification or elimination of ambiguous questions. Based on the current results, the questions seem sufficient, and the same exam will be administered once more during the current assessment cycle.

5.2. Should changes be made in the way this assessment was done? If so, describe the changes.

The current method of administering the exam during a session of a senior level class (such as COMP 424) in which all three courses assessed (COMP 122, COMP 222, COMP 322) are prerequisites seems appropriate, and no changes seem necessary.

5.3. Should there be any changes in curriculum? If so, describe recommended changes.

No suggested changes to the curriculum were made. COMP 122, COMP 222, and COMP 322 are all required courses, and they themselves should sufficiently meet the learning outcome.

5.4. Should any other changes be made?

N/A

APPENDIX

1   Student Learning Outcome

Be able to apply knowledge of computing and mathematics appropriate to the discipline

2   Assessment Activities and Schedule

- Identify COMP 122, COMP 222, and COMP 322 learning objectives which are related to the learning outcomes – March 2009 by the Systems Group.
- Develop assessment test questions – April 2009, by Systems Group.
- Conduct assessment test – May 2009 by Brenda Timmerman (COMP 424).
- Verify scoring rubrics for the assessment of learning outcomes – May 2009 by the Systems Group.
- Analyze the results of the test – May 2009 by the Systems Group.
- Prepare the assessment report – Sept. 2010, by the Systems Group.

3 Assessment Test

COMP 122/222/322 Assessment

The following is to test which material is best retained from the previous courses: COMP 122/222/322. Please answer to the best of your knowledge and/or memory.

Please check the boxes for where and when you took COMP 122/222/322 or their equivalents:

Class	Where		When (what semester)					
	CSUN	Other school	Fall 2006 or earlier	Spring 2007	Fall 2007	Spring 2008	Fall 2008	Did not take or exempt
COMP122								
COMP222								
COMP322								

COMP 122 material:
1. The unsigned binary number **10011** represents the decimal number: _____
2. The largest 6-bit unsigned binary number is equal to the decimal number: _____
3. The decimal number 32 can be represented in hexadecimal as: _____
4. The hexadecimal number A0 represents the decimal number: _____
5. The range of all possible 12-bit unsigned binary numbers is from 0 to: _____
6. The twos' complement binary addition: **0101001+0110110=**   _____
7. The signed-magnitude addition: **0 101001 + 1 110110=**   _____
{Note: Question 7 eliminated due to ambiguity if magnitude is left-right or right-left)}

COMP 222 material:
8. A cache memory replaces the need for a main memory in the system.   T / F
9. Speedup is original execution time divided by improved execution time.   T / F
10. Pipelining generally improves the total execution time of a series of instructions.   T / F
11. IEEE-754 single precision floating point numbers consist of a total of 23 bits.   T / F
12. A page table maps virtual pages to real physical page frames in main memory.   T / F
13. A 3-bus CPU architecture always performs better than a 2-bus CPU architecture.   T / F
14. Throughput is measured as number of tasks accomplished per unit time.   T / F

COMP 322 material questions:
15. It is possible to have a deadlock involving only one process.   T / F
16. Turnaround time is the average number of jobs completed per time period   T / F
17. The simplest file access method is **direct access**.   T / F
18. A file is an abstract data type defined and implemented by the OS.   T / F
19. A socket is defined as an endpoint for communication.   T / F
20. Pure demand paging *never* brings in a page until that page is referenced.   T / F
21. A system of 6 identical printers that are shared by 3 processes, each of which needs at most 3 printers, is deadlock-free.   T / F

4 Rubrics for the Learning Outcome

Unacceptable (0-8): Evidence that the student has mastered this learning objective is not provided, unconvincing, or very incomplete.

Marginal (9-11): Evidence that the student has mastered this objective is provided, but is weak or incomplete.

Adequate (12-14): Evidence shows that the student has generally attained this objective.

Excellent (15-20): Evidence demonstrates that the student has mastered this objective at a high level.

5 Test Results

	Excellent	Adequate	Marginal	Unacceptable
Exam results	16% (3)	53% (10)	16% (3)	16% (3)

Each individual test score result is shown below, where a "1" for a particular question indicates a correct answer, and a "0" indicates a wrong answer. Individual questions for which the total percent correct fell less than the marginal range (<45%) are shaded.

| Test #	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	Total
1	1	1	1	1	1	1	0	1	1	1	1	1	1	1	1	0	1	1	0	0	0	16
2	1	1	1	1	1	0	0	1	1	1	1	1	0	0	1	0	0	1	1	1	1	15
3	1	1	1	1	1	1	0	1	0	0	0	1	0	1	1	1	1	0	1	1	1	15
4	1	1	1	0	1	0	0	1	0	1	1	1	1	1	0	1	0	0	1	1	1	14
5	1	1	1	1	1	0	0	1	1	1	0	1	1	1	1	0	0	0	1	0	1	14
6	1	1	1	1	1	0	0	1	1	0	0	1	1	1	1	0	0	0	1	1	1	14
7	1	1	0	1	0	0	0	1	1	0	0	1	1	1	1	1	0	0	1	1	1	13
8	1	0	0	0	0	1	0	1	0	1	1	1	1	1	1	0	0	1	1	1	1	13
9	0	0	0	0	0	1	0	1	0	1	1	1	1	1	1	1	0	0	1	1	1	12
10	1	0	0	0	0	1	0	1	1	1	1	0	0	1	1	0	1	0	1	1	1	12
11	1	0	0	0	0	0	0	1	1	1	1	1	0	1	1	0	1	0	1	1	1	12
12	1	0	1	1	0	1	0	0	0	1	1	1	1	1	1	0	0	0	0	1	1	12
13	1	1	1	0	1	0	0	1	0	1	0	1	1	1	0	1	0	0	1	0	1	12
14	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	0	0	0	1	0	1	10
15	1	0	0	0	0	1	0	0	1	0	1	1	1	1	1	1	0	0	1	0	0	10
16	1	1	1	0	0	1	0	1	1	0	0	1	1	0	0	1	0	0	0	0	1	10
17	1	1	1	1	0	1	0	0	1	0	0	1	0	0	1	0	0	0	0	0	0	8
18	1	0	0	0	0	1	0	1	0	1	0	1	1	0	1	0	0	0	0	0	1	8
19	1	0	0	0	0	0	0	0	1	1	1	0	0	1	0	0	0	1	1	1	0	8
Total	17	10	10	8	7	10	0	15	12	13	11	17	13	15	15	7	4	4	14	11	15	
Avg.	89%	53%	53%	42%	37%	53%	0%	79%	63%	68%	58%	89%	68%	79%	79%	37%	21%	21%	74%	58%	79%	

6 Analysis of Test Results

Given the test scores, the results of the test questions (Questions 1-21, except for Question 7) were re-analyzed according to the demographic results:

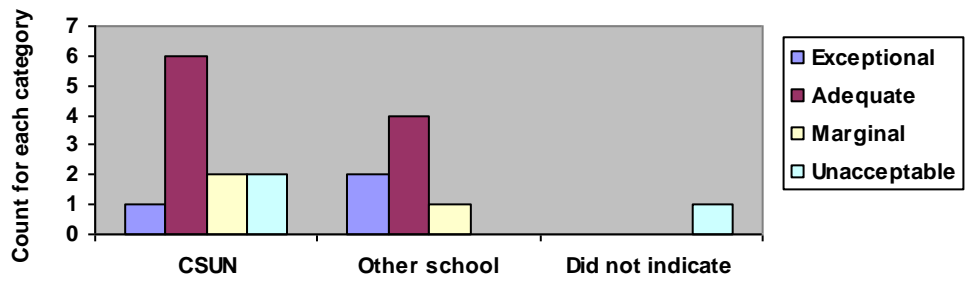| Class	Where			When (what semester)					
	CSUN	Other school	Did not indicate where	Fall 2006 or earlier	Spring 2007	Fall 2007	Spring 2008	Fall 2008	Did not indicate when
COMP122	53% (10)	37% (7)	11% (2)	53% (10)	16% (3)	16% (3)	---	---	16% (3)
COMP222	58% (11)	37% (7)	5% (1)	37% (7)	16% (3)	21% (4)	16% (3)	---	11% (2)
COMP322	84% (16)	5% (1)	11% (2)	11% (2)	5% (1)	16% (3)	32% (6)	26% (5)	11% (2)

COMP 122 Results (where taken)
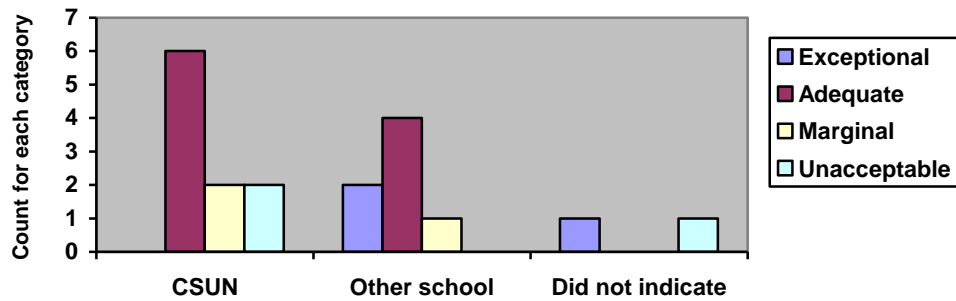
COMP 122 Results (when taken)
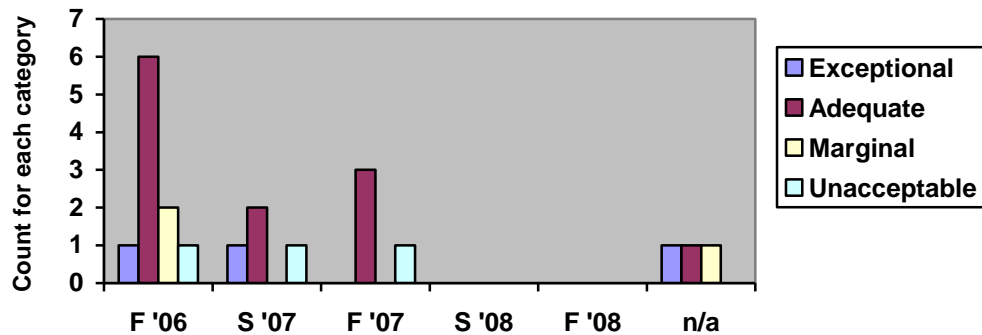
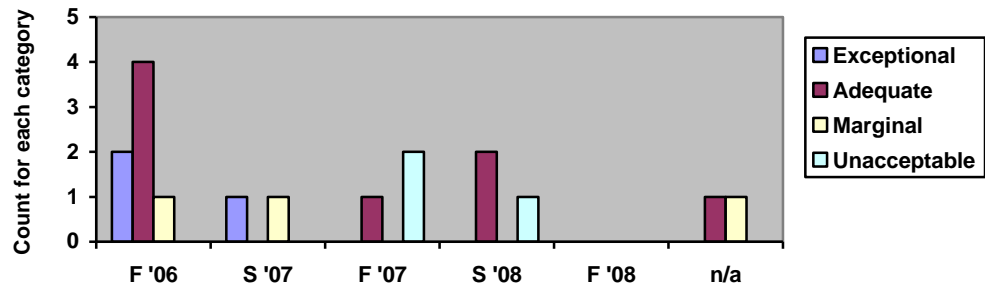## COMP 222 Results (where taken)

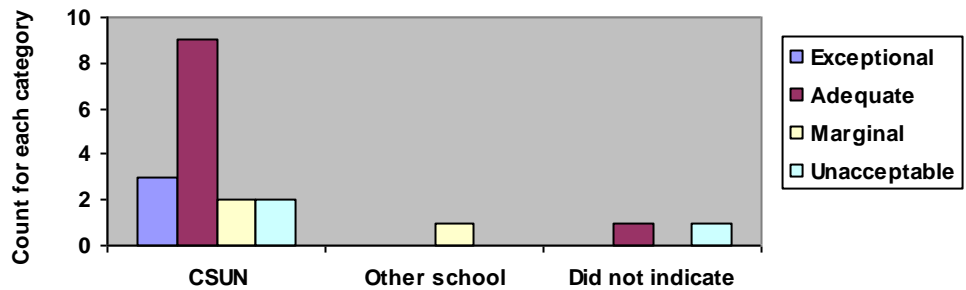## COMP 222 Results (when taken)

COMP 322 Results (where taken)

COMP 322 Results (when taken)