Student Learning Outcomes Committee
Department/Program Assessment Results Report

Department/Program: IDS / Information Systems   Degree: BSBA – Information Systems

Date Submitted: 3/20/2009

I. Working from your assessment report of last year, please discuss some changes made or strategies implemented in response to last year's results.

The assessment results obtained last year indicated that most of the students had achieved the requisite level of competence in the four SLOs assessed (see Appendix A for the program's goals and SLOs).   Ninety-five percent of the students obtained scores of "Satisfactory" or better on SLO 1.1. For SLOs 1.2 and 1.3, the percentages of students scoring "Satisfactory" or better were 91 and 90, respectively. In the case of SLO 4.1, 97 percent of the students obtained scores of "Good" or "Very Good", the two highest scores possible. While these scores are very encouraging, we are striving to do even better.   Among the things emphasized at our recent meetings on assessment is the need to make students aware of rubrics that would be used to evaluate their performance in class, as this has been shown to generally lead to higher levels of achievement.   A more specific strategic decision aimed at enhancing student performance was made by Dr. Theo Addo who, last year, assessed SLO 4.1 — *Represent program logic in the form of a flowchart or pseudocode*. Dr. Addo has resumed a practice he used to undertake several years ago, namely selecting some of the very good students from a current IDS 315 class (where program logic is taught) to act as tutors for the following generation of students in that class. (The selected students have to be willing to do this; they are not coerced into doing it.) The benefit for these students is that the tutoring is combined with a number of advanced programming projects to constitute a special independent study class (IDS 498) for them. Thus, they get academic credit while helping students to achieve learning objectives.

An on-line survey, designed by Drs. Bruce Reinig and Theo Addo in Spring 2008, was administered to alumni of the BSBA-IS program from late spring through summer of last year. This survey asked the alumni their views and opinions about the program goals and objectives, including whether or not they thought the goals and objectives should be kept, and how well they felt the program helped them to achieve these goals and objectives. The results of the survey indicate that most of the alumni feel that the goals are largely desirable and should be included in the program and, also, that the program, for the most part, helped them achieve these goals and objectives. However, the overall response to goal/objective achievement, while in the desirable range, was not as strong as the overall response to goal/objective inclusion (see Appendix B for the results of these indirect measures). Therefore, in the eyes of our alumni, there are several areas for improvement with respect to student achievement. The IS faculty have not yet had opportunity to discuss the results of our alumni survey, but we will definitely be meeting to discuss them relative to our findings from direct measures of the goals and student learning outcomes, and to formulate plans and strategies for making improvements.

II. Drawing upon the goals and objectives contained in the department/program student learning assessment plan, what was the focus of the department's student learning assessment for the past academic year?

A.	This section should list the student learning goals and objectives that were the focus for the report year (selected from your complete set of goals and objectives).

During the 2008 calendar year, our assessment focus was on Goals 2 and 3 (see Appendix A). Within Goal 2, SLOs 2.1 and 2.2 were assessed, and within Goal 3, SLOs 3.1, 3.2, and 3.3 were assessed.

B.	It would also be helpful to note here the student learning goals and objectives that you intend to assess during the next year.

For the 2009 calendar year, our assessment focus will be on SLOs 5.1, 5.2, 5.3, and 5.4

III.   What information was collected, how much, and by whom?

A.	This section should briefly describe the methodology used to examine the targeted goals and objectives. Please attach relevant scoring rubrics, surveys, or other materials used to examine student learning to the back of the report, as Appendices.

All the SLOs were assessed by Dr. Robert Plice. He assessed SLOs 2.1 and 2.2 in his IDS 306 class using project assignments. Twenty-eight students participated in the assessment. He assessed SLOs 3.1, 3.2, and 3.3 in his IDS 406 class. Thirty students participated in this assessment. For SLO 3.1 he used an assignment; for SLO 3.2 he used a combination of an assignment and an examination; and for SLO 3.3, he used an examination question. The rubrics he used to assess these SLOs can be found in Appendices C through G.

IV.   What conclusions were drawn on the basis of the information collected?

A.	This section should briefly describe the results (in summary form) in regard to how well students have met the targeted goals and objectives. For example, what percentage of students met the objectives? Is this a satisfactory level of performance? What areas need improvement?

The results obtained from all the SLO assessments indicate that the vast majority of the students have met the established learning goals and objectives.
A breakdown of the student scores for SLO 2.1 is shown below. Eighty-nine percent of the students received a score of "Satisfactory" or better, with 29 percent receiving the highest score of "Excellent". The mean score was 3.8 out of 5, which represents an average rating between "Satisfactory" and "Good", but approaching the latter.

SLO 2.1 – Demonstrate ability to estimate and quantify the present value of tangible and intangible costs and benefits (including strategic benefits) arising from an information system investment

Score	No. of Students (N=28)	% of Students
5 - Excellent	8	29%
4 - Good	11	39%
3 - Satisfactory	6	21%
2 – Improvement needed	2	7%
1 - Unsatisfactory	1	4%

Mean Score: 3.8 out of 5

A breakdown of the student scores for SLO 2.2 is shown below. Seventy-eight percent of the students received scores of "Satisfactory" or better. The mean score for the class was 3.6 out of 5, representing an average rating between "Satisfactory" and "Good".

SLO 2.2 – Demonstrate ability to identify information system requirements and model the functionality of a requirements-compliant system

Score	No. of Students (N=28)	% of Students
5 - Excellent	6	21%
4 - Good	11	39%
3 - Satisfactory	5	18%
2 – Improvement needed	5	18%
1 - Unsatisfactory	1	4%

 Mean Score: 3.6 out of 5

 Actions to be taken based on results ("closing the loop"):
Dr. Plice believes that Goal 2 performance (under which the above two SLOs come) may be improved by giving greater emphasis to strategic analysis and data-flow diagramming in order to improve student understanding in these areas.

A breakdown of the student scores for SLO 3.1 is shown below. Ninety percent of the students received scores of "Satisfactory" or better. No student received an "Unsatisfactory" score, but 10 percent were rated as needing improvement. The mean score for the class was 3.6 out of 5, which represents an average rating between "Satisfactory" and "Good".

SLO 3.1 – Demonstrate ability to create data models to support the functionality of an information system

Score	No. of Students (N=30)	% of Students
5 - Excellent	6	20%
4 - Good	9	30%
3 - Satisfactory	12	40%
2 – Improvement needed	3	10%
1 - Unsatisfactory	0	0%

 Mean Score: 3.6 out of 5

A breakdown of the student scores for SLO 3.2 is shown below. Again, ninety percent of the students received scores of "Satisfactory" or better. No student received an "Unsatisfactory" score, but 10 percent were rated as needing improvement. The mean score for the class was 3.9 out of 5, which is very close to an average rating of "Good".

SLO 3.2 – Demonstrate ability to create a user-interface and architecture design to support the functionality of an information system

Score	No. of Students (N=30)	% of Students
5 - Excellent	9	30%
4 - Good	13	43%
3 - Satisfactory	5	17%
2 – Improvement needed	3	10%
1 - Unsatisfactory	0	0%

Mean score: 3.9 out of 5

A breakdown of the student scores for SLO 3.3 is shown below. Ninety-three percent of the students received scores of "Satisfactory" or better. No student received an "Unsatisfactory" score, but 7 percent were rated as needing improvement. The mean score for the class was 3.8 out of 5, which represents an average between "Satisfactory" and "Good", but approaching the latter.

SLO 3.3 – Identify and evaluate alternative conversion and migration strategies for implementing an information system in an organization

Score	No. of Students (N=30)	% of Students
5 - Excellent	6	20%
4 - Good	13	43%
3 - Satisfactory	9	30%
2 – Improvement needed	2	7%
1 - Unsatisfactory	0	0%

Mean score: 3.8 out of 5

Actions to be taken based on results ("closing the loop"):
For better performance on Goal 3 and its objectives, Dr. Plice thinks that student performance may be improved by placing greater emphasis on data normalization and by continuing to emphasize conversion and migration strategies in the curriculum.

V. **How will the information be used to inform decision-making, planning, and improvement?**
   A.   This section should describe the strategies that will be implemented for program improvement as a result of the conclusions drawn from the assessment activities.

Even though the overall results obtained for the assessed SLOs are quite encouraging, more can be done to improve student performance and move more students from the lower and mid-level ratings to the higher ones. The "Actions to be taken" segments in the preceding section represent some actions that will be taken to help us achieve that goal. The IS faculty will meet to discuss these actions, in conjunction with the indirect measures obtained from the alumni survey, with a view to developing and adopting further improvement strategies as needed.   The expectation is that assessment results, taken over time, will reflect a positive trend in overall student achievement.

Report completed by: <u>Theo Addo</u>   Date: <u>3/20/09</u>

Appendix A

Goals, SLOs, and Assessment Schedule for BSBA-IS Program

BSBA in Information Systems -- Assessment

Vision Statement
To develop students who can apply information systems and technologies to add value to organizations.

Undergraduate IS Assessment Schedule

Goals and SLOs	Point(s) of Assessment	Assessment Method	Planned Assessment Date	Assessment Completed (Y/N)
Goal 1: Explain fundamental database concepts and be able to apply it to the design and development of relational databases.				
SLO 1.1 – Design a conceptual relational database in 3rd Normal Form	IDS 380	Project	Spring 2007	Y
SLO 1.2 – Build a relational database using a common DBMS software package.	IDS 380	Project	Spring 2007	Y
SLO 1.3 – Write SQL statements to query a relational database consisting of at least two tables.	IDS 380	Project	Spring 2007	Y
Goal 2: Learn the major steps pertaining to the planning and analysis phases of the systems development life cycle (SDLC) and demonstrate the ability to produce the associated deliverables.				
SLO 2.1 – Demonstrate ability to estimate and quantify the present value of tangible and intangible costs and benefits (including strategic benefits) arising from an information system investment.	IDS 306	Assignment	Spring 2008	Y
SLO 2.2 – Demonstrate ability to identify information system requirements and model the functionality of a requirements-compliant system.	IDS 306	Assignment	Spring 2008	Y
Goal 3: Learn the major steps pertaining to the design and implementation phases of the system development life cycle (SDLC) and demonstrate ability to produce the associated deliverables.				
SLO 3.1 – Demonstrate ability to create data models to support the functionality of an information system.	IDS 406	Assignment	Spring 2008	Y
SLO 3.2 – Demonstrate ability to create a user-interface and architecture design to support the functionality of an information	IDS 406	Assignment and Examination	Spring 2008	Y

system.				
SLO 3.3 – Identify and evaluate alternative conversion and migration strategies for implementing an information system in an organization.	IDS 406	Exam question	Spring 2008	Y
Goal 4: Acquire fundamental working ability of a computer programming language, and be able to use it to write programs to solve common business problems.				
SLO 4.1 – Represent program logic in the form of a flowchart or pseudocode.	IDS 315	Project	Fall 2007	Y
SLO 4.2 – Develop a fully functional computer program from given specifications.	IDS 315	Project	Fall 2009	
SLO 4.3 – Use the logic of selection (decision) in procedures such as data validation.	IDS 315	Exam / Assignment	Fall 2009	
SLO 4.4 – Use the logic of iteration (looping) to process lists and arrays.	IDS 315	Exam / Assignment	Fall 2009	
Goal 5: Explain fundamental capability (both theoretical and practical) of data communications, computer networking, and related hardware concepts.				
SLO 5.1 – Identify fundamental issues of networking, including networking devices, transmission media, and various interfaces.	IDS 483	Exam / Assignment	Spring 2009	
SLO 5.2 – Explain standard architectures (TCP/IP, OSI, and Hybrid) in terms of layer functions and PDUs.	IDS 483	Exam / Assignment	Spring 2009	
SLO 5.3 – Explain the Internet protocol (IP) and transport layer protocols (TCP & UDP) and associated concepts including IP addressing.	IDS 483	Exam / Assignment	Spring 2009	
SLO 5.4 – Describe Ethernet (802.3) and Wireless (802.11) LAN standards.	IDS 483	Exam / Assignment	Spring 2009	
Goal 6: Acquire ability of contemporary information systems issues, including the use of information technology for competitive advantage.				
SLO 6.1 – Analyze information systems management issues or information technology trends.	IDS 492	Assignment	Spring 2010	
SLO 6.2 – Identify and describe opportunities and challenges facing information systems executives in today's global economy.	IDS 492	Exam	Fall 2010	
SLO 6.3 – Analyze the strategic impact of an organization's current information systems portfolio vis-à-vis the information systems under development	IDS 492	Exam question	Summer 2006	Y
Goal 7: Demonstrate competence in communicating technical information effectively to both technical and non-technical audiences.				

SLO 7.1 – Create and deliver a structured walkthrough presentation that communicates the results of the analysis and design phases of the SDLC to a non-technical audience.	IDS 306 / IDS 406	Presentation	Spring 2011	
SLO 7.2 – Construct and articulate an appropriate framework for exposing the inter-relationships in the analysis- and design-phase deliverables.	IDS 306 / IDS 406	Presentation	Spring 2011	
SLO 7.3 – Present, explain and defend the analysis- and design-phase deliverables to an audience.	IDS 306 / IDS 406	Presentation	Spring 2011	
SLO 7.4 – Present research findings geared towards a managerial audience on technological issues, including specific technologies and/or technological trends.	IDS 492	Presentation	Spring 2007	Y

Appendix B

Assessment Results from Survey of BSBA-IS Alumni

<u>Notes</u>
1. Respondents were asked to indicate the extent of their agreement with the following two essential statements pertaining to each goal and objective, using a scale of 1 to 5 (1 = Strongly Disagree; 5 = Strongly Agree). The numerical values reported below are mean values for each response:
    (a) The goal/objective should be included in the set of goals/objectives for the undergraduate Information Systems major.
    (b) The goal/objective was accomplished with respect to my own education in the undergraduate program. That is, I achieved the goal/objective while at SDSU.
2. The goals and objectives stipulated in the survey are the same ones shown in Appendix A
3. No. of respondents (N) = 101

Goals and Objectives	Should be included	Achieved at SDSU
Goal 1	4.54	3.95
SLO 1.1	3.73	4.11
SLO 1.2	3.58	4.34
SLO 1.3	4.56	3.87
Goal 2	4.71	4.15
SLO 2.1	4.51	3.38
SLO 2.2	4.60	3.67
Goal 3	4.63	3.97
SLO 3.1	4.51	3.85
SLO 3.2	4.49	3.47
SLO 3.3	4.26	3.07
Goal 4	4.51	3.87
SLO 4.1	4.42	4.22
SLO 4.2	4.27	3.71
SLO 4.3	4.24	3.79
SLO 4.4	4.17	3.86
Goal 5	4.49	3.90
SLO 5.1	4.51	3.76
SLO 5.2	4.26	3.61
SLO 5.3	4.29	3.62
SLO 5.4	4.17	3.45
Goal 6	4.62	3.70
SLO 6.1	4.58	3.71
SLO 6.2	4.50	3.56
SLO 6.3	Missing data	Missing data
Goal 7	4.74	3.75
SLO 7.1	4.59	3.59
SLO 7.2	4.24	3.52
SLO 7.3	4.48	3.68
SLO 7.4	4.48	3.30

Appendix C

Rubric used for Assessing SLO 2.1

Criterion	1=Unsatisfactory	2=Needs improvement	3=Satisfactory	4=Good	5=Excellent
2.1a Strategic analysis	Strategic analysis is unreasonable given facts of the business case	Strategic analysis not clearly traceable to facts of business case	Analysis based on business case facts	Analysis considers most of the relevant business case facts	Strategic framework thoroughly justified and analyzed; implications articulated in terms of business case facts
2.1b Traceability	Cost and benefit estimates unjustified	Cost and benefit items not based on business case facts or assumptions	Cost and benefit items reasonable in terms of business case and assumptions	Cost and benefit items generally traceable to facts of business case and assumptions	Each cost and benefit item clearly traceable to business case facts and appropriate assumptions
2.1c Completeness	Cost and benefit estimates incomplete, major categories not included	Some major cost and benefit categories incomplete	Major cost and benefit categories included	Analysis shows that most cost and benefit elements have been identified and included in analysis	Analysis clearly shows that all cost and benefit elements have been identified and included

Appendix D

Rubric used for Assessing SLO 2.2

Criterion	1=Unsatisfactory	2=Needs improvement	3=Adequate	4=Satisfactory	5=Excellent
2.2a Use cases	Use cases do not capture a system concept	Some of the system requirements are captured in use-case model	System concept is generally understandable and use-case model is complete	System concept is understandable with accompanying explanation; use-case model is complete	Use cases capture a complete system concept in a format that is clearly understandable by domain experts
2.2b Data flow diagrams	Data flow diagrams incorrect and incomplete	Data flow diagrams correct, not complete in terms of functionality	Data flow diagrams correct and complete	Data flow diagrams correct and complete; some hierarchical decomposition used	Data flow diagrams correct, complete, and hierarchical decomposition used appropriately

Appendix E

Rubric used for Assessing SLO 3.1

Criterion	1=Unsatisfactory	2=Needs improvement	3=Satisfactory	4=Good	5=Excellent
3.1a Completeness	Data model incomplete or incorrectly formatted	Major data requirements missing from model or major errors in notation or formatting	Data model largely complete, minor errors in notation or formatting	Data model complete, few or no notational errors, some reorganization needed	Data model complete, correctly formatted, well organized
3.1b Normalization	Normalization rules not understood or applied	Some normalization rules correctly understood and applied	All normalization rules understood, some errors in applying rules	Minor errors in applying normalization rules	Normalization rules completely understood and correctly applied

Appendix F

Rubric used for Assessing SLO 3.2

Criterion	1=Unsatisfactory	2=Needs improvement	3=Adequate	4=Satisfactory	5=Excellent
3.2a Completeness	Design elements incomplete or incorrectly formatted or described	Some elements missing from design or description	Major design elements included, format and description complete and understandable	Minor design elements omitted, format appropriate, description correct	Design complete and appropriately formatted. Description correct
3.2b Traceability	No relationship between design and requirements	Major discrepancies between requirements and design	Most requirements appropriately reflected in design	Minor discrepancies between requirements and design	Functional and nonfunctional requirements understood and applied appropriately to design

Rubric used for Assessing SLO 3.3

Criterion	1=Unsatisfactory	2=Needs improvement	3=Adequate	4=Satisfactory	5=Excellent
3.3a Conversion	Fails to recognize or identify alternative conversion strategies	Fails to consider one or more alternatives, does not justify choice	Correctly identifies alternative conversion strategies, loosely justifies choice	Correctly identifies alternative conversion strategies, justifies choice by reference to business case	Correctly identifies alternative conversion strategies and clearly justifies choice in terms of business case facts
3.3b Migration	Fails to recognize or identify alternative migration strategies	Fails to consider one or more alternatives, does not justify choice	Correctly identifies alternative migration strategies, loosely justifies choice	Correctly identifies alternative migration strategies, justifies choice by reference to business case	Correctly identifies alternative migration strategies and clearly justifies choice in terms of business case facts