

Spring 2005 Embedded Assessment Report

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Introduction

This report shows how the college is directly assessing the learning goals of four degree programs –the B.S. in Business Administration, the B.S. in Accountancy, the B.S. in Information Systems, the B.A. in Economics- in the spring 2005 semester. The Master of Business Administration has established learning goals for the degree program and will begin collecting course embedded measures in the spring 2006 semester.

Program learning goals are directly assessed with embedded measures in 14 different courses where students have an opportunity to demonstrate proficiency in the learning goals. The linkage between program learning goals and embedded measures in specific courses is shown in Tables 1 through 4.

For example, Table 1 indicates that FIN 303, FIN 435, MKT 304, SOM 306, and ECON 160 are courses where data is collected to measure students' problem solving skills (i.e., BSBA general learning goal 2). The material in these five courses provides students with an opportunity to improve their problem solving skills and their performance is measured with exam questions or class projects.

Table 5 indicates the type of instruments that faculty selected to measure student achievement in the learning goals. For example, BLAW 280, SOM 306, and ECON 401 all used essay exam questions to assess how well students were meeting the course learning goals.

Table 1. Linkage between B.S. in Business Administration Program Learning Goals and Course Embedded Measures

	BSBA Program Learning Goals	Courses with Embedded Measures
General Learning Goals	1. Our graduates have strong written and oral communication skills.	BUS 302, MKT 304, SOM 306, SOM 307
	2. Our graduates have strong problem solving skills.	FIN 303, FIN 435, MKT 304, SOM 306, ECON 160
	3. Our graduates have strong critical thinking skills.	BUS 302, BLAW 280, MKT 304, ECON 160
	4. Our graduates have an understanding of ethics and social responsibility.	BLAW 280, FIN 303, MKT 304, MGT 360
	5. Our graduates have strong information technology skills.	MKT 304, SOM 306, SOM 307
	6. Our graduates can work effectively in teams.	
Management Specific Learning Goals	1. Our graduates understand the global context of business.	FIN 435, MKT 304, MGT 360
	2. Our graduates understand the cross-functional and interdisciplinary nature of business problems.	BUS 302
	3. Our graduates understand and can apply basic business concepts.	BUS 302, BLAW 280, FIN 303, FIN 435, MKT 304, MGT 360, SOM 306, SOM 307, ECON 160

Table 2. Linkage between B.S. in Accountancy Program Learning Goals and Course Embedded Measures

	BSA Program Learning Goals	Courses with Embedded Measures
General Learning Goals	1. Each student shall be able to recognize and analyze ethical problems in practical accounting situations and to select and defend a course of action.	
	2. Each student shall be able to effectively communicate complex accounting concepts both orally and in writing.	ACCT 351 (COM)
	3. Each student shall be able to apply critical thinking skills when analyzing and solving problems.	ACCT 351
Accounting Specific Learning Goals	1. Each student shall have a conceptual understanding of accounting for:	
	• External financial reporting	ACCT 351
	• Managerial applications	
	• Tax planning and preparation	
	• The attest function	
	2. Each student shall be able to apply their conceptual understanding to both structured and unstructured problems in:	
	• External financial reporting	ACCT 351
	• Managerial accounting	
	• Tax planning and preparation	
	• Auditing	
	3. Each student shall be able to research accounting literature for both structured and unstructured problems in:	
	• External financial reporting	ACCT 351
	• Tax planning and preparation	
	• Auditing	
	4. Each student shall have the necessary knowledge and skills required to sit for a certifying examination (CPA, CMA, or CFM).	

Table 3. Linkage between B.S. in Information Systems Program Learning Goals and Course Embedded Measures

	BSIS Program Learning Goals	Courses with Embedded Measures
General Learning Goals	1. Each student shall be able to recognize and analyze ethical problems in information system situations and select and defend a course of action.	IS 331
	2. Each student shall be able to effectively communicate complex information system concepts orally and in writing.	IS 331
	3. Each student shall be able to apply critical thinking and problem-solving skills when analyzing and solving information system problems.	IS 331
	4. Each student shall understand the individual and group dynamics of information systems project teams.	IS 331
IS Specific Learning Goals	1. Each student shall have a working understanding of:	
	• Basic computer hardware	IS 331
	• Basic computer software	IS 331
	• Information system components and their interrelations	IS 331
	• Organizational environment and role of IS in organizations	IS 331
	2. Each student shall have a conceptual understanding of information system components and their interrelations, including:	
	• Operating systems	
	• Application software	
	• Database management systems	IS 331
	• Networking and telecommunications component	IS 331, IS 435
	3. Each student shall have programming skills in developing business applications.	
	4. Each student shall have the knowledge and skills to conduct the appropriate systems development life cycle activities leading to effective information systems that support an organization's strategic objectives.	IS 331
	5. Students shall develop skills through research in IS literature that will prepare them for life-long learning in the field.	IS 331

Table 4. Linkage between B.A. in Economics Program Learning Goals and Course Embedded Measures

	BAE Program Learning Goals	Courses with Embedded Measures
General Learning Goals	1. Quantitative Skills	ECON 401
	2. Communication Skills	
Economics Specific Learning Goals	1. Students will have the ability to apply supply and demand analysis to analyze the business environment and public policy.	ECON 160
	2. Students will understand why there are gains from trade.	ECON 160
	3. Students will understand the importance of considering opportunity cost in decision making.	ECON 160
	4. Students will understand why some economies are wealthy and others are not.	
	5. Students will understand key macroeconomic measures of economic activity.	ECON 401
	6. Students will understand the role of markets as an organizer of economic activity.	
	7. Students will be able to express economic concepts both intuitively and more formally.	ECON 401
	8. Students will be able to use and interpret economic data and statistics effectively.	
	9. Students will understand the impact of monetary and fiscal policies on macroeconomic variables.	ECON 401
	10. Students will be able to evaluate the significance of market failure for public policy.	

Table 5. Types of Instruments used to Cover Learning Goals

Assignments	Courses with Embedded Measures
Multiple choice exam questions	BUS 302, FIN 303, FIN 435, MGT 360, IS 331, IS 435, ECON 160
Essay exam questions	BLAW 280, SOM 306, IS 435, ECON 401
Class project	MKT 304
Case analysis	BUS 302, SOM 307, ACCT 351, ACCT 351 (COM)
Formal presentation	BUS 302

Business 302, Gateway Experience

Business 302 is our "Gateway" course that prepares students for upper-division coursework. It is a required course for all business programs (i.e., BSBA, ACCT, and IS) and must be taken prior to, or concurrently with, the student's first upper-division business core classes. BUS 302 reviews and tests students' knowledge of the lower-division business core (financial and managerial accounting, micro and macroeconomics, business law, and statistics) by integrating and applying concepts from these courses to solve business problems. While the course does not introduce new material from the lower-division business core, it is designed to develop the ability of our students to apply these disciplines in a complex business environment. Students also learn to work in teams, to analyze business cases, to make class presentations, and to write short business memorandums and letters.

Table 6 shows course learning goals, alignment with program learning goals, SKA, and student performance on various course assignments in BUS 302. This data was collected from 13 sections containing 378 students enrolled in BUS 302 during the spring 2005 semester.

Table 6. Embedded Measures for BUS 302

Course Learning Goals	Linkage to Program Learning Goals	Skills, Knowledge, and Abilities (SKA)	Not Good Enough	Good Enough	Very Good
Oral Communication	-Effective Communication	Intro, platform skills, visual aids, clear comm., handling Q&A	2.6%	43.7%	53.7%
Written Communication		Focus & audience, organization & flow, clarity & correctness of style, and presentation	16.9%	58.9%	24.1%
Review and Integrate the Lower-division Core	-Critical thinking -Apply cross-functional and discipline-based knowledge	Understand & apply the top 10 concepts from 6 lower-division core classes	15.6%	53.7%	30.7%

The scale in Table 7 was used to classify student performance on each learning goal. The oral communication measure is derived from a formal case presentation in the class. Students work in teams to develop and present a Power Point presentation. Each student must present a portion of the team presentation and is graded individually on her performance. Students are provided with a *Presentation Evaluation Form*, which indicates how the total points are allocated to the various skills, knowledge, and abilities that are required for a formal presentation. This form (among others used in the Gateway course) is extremely important because it helps students understand exactly what is required to meet the course learning goals (e.g., to be a good presenter).

By examining the total points for the presentation, we see that only 2.6% of the students fall into the category “not good enough.” Apparently, a substantial number of Gateway students are successful in making formal, oral presentations as 53.7% fall into the category of “very good” while 43.7% are deemed “good enough.” These results may indicate that our students have largely mastered the skills required for formal oral presentations. Alternatively, working in teams may bolster the individual performance of weaker students who receive help from team members to create the Power Point slides (worth 30 points out of 100).

Table 7. Scale for All Measures in Table 6

Performance on SKA	Outcome
Less than 70%	Not good enough
More than 70% but less than 85%	Good enough
85% or more	Very good

The written communication measure in Table 6 comes from an individual writing grade on the case analysis. Each team submits five business cases that are designed to review and integrate the top ten concepts from the lower-division core. The teams receive a content grade and a writing grade for each case. The content grade is the same for all individual team members but the writing grade is specific to the principal writer for a particular case. Students are provided with a *Case Write Up Evaluation Form With Point Allocations*, which indicates how the total points are allocated to the various skills, knowledge, and abilities that are required for a writing assignment.

By examining the total points for the writing grade, we see that 16.9% of the students fall into the category “not good enough.” A large number of students are successful in creating clearly written case analysis as 24.1% fall into the category of “very good” while 58.9% are deemed “good enough.” These results may indicate that our students have largely mastered the skills required for producing clear written assignments. Alternatively, working in teams may hide the performance of weaker students. A principal author receives written work from team members and then assembles and edits their team’s answers to case questions. The Gateway instructors recognize that this is a potential problem and are working to assess individual writing assignments that do not involve the work of other team members.

The learning goal entitled “review and integrate the lower-division core” comes from the content grade on the case analysis. Student performance in Table 6 is determined by the average content grade on the five cases. By examining the total points for the content grade, we see that 15.6% of the students fall into the category “not good enough.” It appears that a large number of students are successful in producing good case analysis as 30.7% fall into the category of “very good” while 53.7% are deemed “good enough.” These results may indicate that our students have largely mastered the skills required for good case analysis. Alternatively, working in teams could hide the performance of weaker students.

The one-unit lab associated with the Gateway course (i.e., BUS 302L) requires students to take a multiple-choice exam in each of the six lower-division core business subjects: financial

accounting, managerial accounting, business law, microeconomics, macroeconomics, and statistics. Students must pass each of the six exams with a minimum score of 8 out of 16 correct answers. If students do not achieve the minimum required score on their first attempt, they are given two additional opportunities to pass each exam. The purpose of the LDC exams is to demonstrate minimal proficiency in all LDC areas. The exam results from all 580 students enrolled in BUS 302L during the spring 2005 semester are summarized in Table 8. The scale for the LDC exams is shown in Table 9.

Table 8. Lower-division Exam Results

Lower-division Exam	Not Good Enough	Good Enough	Very Good	Mean score
Financial Accounting	14.9	69.9	15.2	9.3
Managerial Accounting	13.5	71.2	15.3	9.4
Business Law	5.2	57.9	37.0	10.8
Microeconomics	12.5	66.0	21.5	9.7
Macroeconomics	13.2	69.1	17.6	9.4
Statistics	16.9	71.4	11.7	9.1

Table 9. Scale for the LDC Exams

Performance on LDC	Outcome
Below 8	Not good enough
8 to 11	Good enough
Above 11	Very good

The scores in Table 8 represent the *highest* exam score achieved by any given student on a particular exam. As mentioned previously, each student had three opportunities to take each of the six LDC exams. The mean scores are fairly similar across the LDC exams –between 9.1 in statistics and 10.8 in business law. However, there are some noteworthy differences when viewing the three performance categories. The findings suggest that students have largely mastered the topics covered in business law. Only 5.2% of the students earn scores that are “not good enough” while 37.0% are “very good.” By contrast, 14.9 (16.9) % of students do not pass the financial accounting (statistics) exam after three takes and are categorized as “not good enough.” And only 15.2 (11.7) % are deemed “very good” in financial accounting (statistics). This suggests that students are having a difficult time with these subject areas. Improvement strategies will be investigated to determine interventions that can improve the performance of these students. Examples of possible intervention strategies are altering topic coverage in the corresponding lower-division course and providing additional review materials to Gateway students.

Business Law 280, Business Law I

This course is required of all students in the BSBA, ACCT, and IS programs. The course learning goals, their linkage to program learning goals, the skills, knowledge, and abilities (SKA) and the results of embedded measures obtained from 223 students in six sections of BLAW 280 are summarized in Table 10.

Table 10. Embedded Measures for BLAW 280

Course Learning Goal	Linkage to Program Learning Goals	Skills, Knowledge, and Abilities	Not Good Enough	Good Enough	Very Good
Torts	-Critical thinking -Ethics	Difference between intentional torts and the tort of negligence	20%	33%	47%
Contracts	-Understand and apply basic business concepts	Difference between a unilateral contract and a bilateral contract	12%	15%	73%
Offer		Elements of a valid offer	27%	27%	46%

The assessment data come from two different types of exam questions; specific and complex. The first question type asked students a very specific question. Here are three examples: (1) Explain the difference between intentional torts and the tort of negligence; (2) Explain the difference between a unilateral contract and a bilateral contract; and (3) What are the requirements for a valid offer?

The second question type is more complex and requires students to deal with a wider range of issues. For example, a direct (or very specific) question might ask students to list the requirements for a valid offer. By contrast, a more complex question would present the students with a set of facts and ask them to determine whether a contract exists between the parties. This determination requires the students to identify the requirements for a valid offer, explain their understanding of the requirements and then apply their understanding to the facts of the case to support their conclusions.

Two course learning goals -torts and contracts- are evaluated with a direct, specific question; while the other goal -offer- is evaluated with a more complex question.

The data in the last three columns of Table 10 are the percentages of students who fell into each performance category. Students were deemed "very good" if their score on a particular exam question was in the A or B range. Alternatively, students who scored in the C range were deemed "good enough," while those who scored in the D or F range were deemed "not good enough."

The findings indicate that most students understand the "difference between intentional torts and the tort of negligence" as 47% of the students fell into the category "very good;" 33% fell into the category "good enough;" and only 20% were "not good enough."

Students scored highest on the questions covering the "difference between a unilateral contract and a bilateral contract" as 73% were deemed "very good" and only "12%" were deemed "not good enough." As mentioned previously, student performance on both of these learning goals is based on a direct, specific question.

The results indicate that students are having some difficulties with the learning goal “offer.” Roughly 27% of the students fell into the “not good enough” category on this goal. However, student performance on this learning goal is based on a more complex question format. Thus, it is difficult to determine the extent to which the question difficulty is driving the reduced student performance. Arguably students’ performance would be higher if they were directly asked for the elements of a valid offer.

The Business Law Department plans to review and discuss these findings during the fall 2005 semester.

Finance 303, Financial Management

This course is required of all students in the BSBA, ACCT, and IS programs. The course learning goals, their linkage to program learning goals, the SKA and the results of embedded measures obtained from 271 students in three sections of Finance 303 are summarized in Table 11.

The instrument used to produce the data is the final examination. One or more multiple choice questions on the final exam covered every skill, knowledge, and ability that is associated with a particular course learning goal. The percentage of correct answers on each question covering a given SKA was computed. The scale in Table 12 was used to classify student performance on each SKA.

The results represent the percentage of correct answers on the questions covering each SKA associated with a particular learning goal. For example, on average, 81% of the students correctly answered the questions on “time value of money concept;” 76% of the students correctly answered the questions on “risk and return concept;” and 81% correctly answered questions that require “financial calculation” --the three SKA associated with the course learning goal of being able to make “investment decisions.”

The rows labeled “weighted mean” provide an overall measure for each course learning goal. These weighted means are calculated by averaging the scores on each SKA associated with a particular learning goal. For example, assuming that the three SKA associated with “investment decisions” are equally weighted in terms of their relative importance, the average score for this learning goal is 79%, putting student achievement on this learning goal into the “good enough” category. The weighted means in Table 11 suggest that students in this course are either “good enough” or “very good” in achieving all four of the course learning goals.

Table 11. Embedded Measures for FIN 303

Course Learning Goal	Linkage to Program Learning Goals	SKA	Not Good Enough	Good Enough	Very Good
Investment Decisions	-Problem Solving -Understand and apply basic business concepts	Time value of money concept		81%	
		Risk and return concept		76%	
		Financial calculation		81%	
Weighted Mean				79%	
Financing Decisions	-Problem Solving -Understand and apply basic business concepts	Financial Markets and Institutions			86%
		Capital Structure			88%
Weighted Mean					87%
Using Financial Data	-Problem Solving -Understand and apply basic business concepts	Financial Statements		78%	
Financial Ethics and Regulatory Requirements	-Ethics and Social Responsibility	Ethics			90%
		Regulatory Requirements			92%
Weighted Mean					91%

Table 12. Scale for All Measures in Table 11

Performance on SKA	Outcome
Less than 70%	Not good enough
More than 70% but less than 85%	Good enough
85% or more	Very good

Finance 435, Problems in Corporate Financial Policy

This course is required of all students in the finance option of the BSBA program. The course learning goals, their linkage to program learning goals, the SKA and the results of embedded measures obtained from 79 students in two sections of Finance 435 are summarized in Table 13.

Table 13. Embedded Measures for FIN 435

Course Learning Goal	Linkage to Program Learning Goals	SKA	Not Good Enough	Good Enough	Very Good
Investment Decisions	-Problem solving -Global context of business -Understand and apply basic business concepts	Cost of capital estimation		80%	
		Capital budgeting techniques			97%
Weighted Mean					89%
Financing Decisions	-Problem solving -Global context of business -Understand and apply basic business concepts	Financial markets and institutions			86%
		Capital structure: theories and applications	68%		
Weighted Mean				77%	
Using Financial Data	-Problem solving -Understand and apply basic business concepts	Financial statement analysis			91%
Asset Valuation	-Problem solving -Understand and apply basic business concepts	Time value concept of money			91%
		Securities valuation	63%		
		Risk and return concept	51%		
		Portfolio theory and asset pricing models			87%
Weighted Mean				73%	

The instruments used to produce the data are two midterms and a final examination. One or more multiple choice questions on each exam covered every skill, knowledge, and ability that is associated with a particular course learning goal. The percentage of correct answers on each question covering a given SKA was computed. The scale in Table 14 was used to classify student performance on each SKA.

Table 14. Scale for All Measures in Table 13

Performance on SKA	Outcome
Less than 70%	Not good enough
More than 70% but less than 85%	Good enough
85% or more	Very good

The results represent the percentage of correct answers on the questions covering each SKA associated with a particular learning goal. For example, on average, 80% of the students correctly answered the questions on “cost of capital estimation” and 97% of the students correctly answered the questions on “capital budgeting techniques;” the two SKA associated with the course learning goal of being able to make “investment decisions.”

The rows labeled “weighted mean” provide an overall measure for each course learning goal. These weighted means are calculated by averaging the scores on each SKA associated with a particular learning goal. For example, assuming that the two SKA associated with “investment decisions” are equally weighted in terms of their relative importance, the average score for this learning goal is 89%, putting student achievement on this learning goal into the “very good” category. The weighted means in Table 13 suggest that students in this course are either “good enough” or “very good” in achieving all four of the course learning goals.

Student performance is deemed “not good enough” in three SKA -(a) “capital structure;” (b) “securities valuation;” and (c) “risk and return concept.” Capital structure is one of the most difficult subjects covered in 435. MM is the only theory used to teach this subject and case studies are used to show the application of the theory. The Finance Department plans to evaluate the effectiveness of this teaching method.

Students scored poorly (i.e., only 38% correct) on one of the two exam questions covering “securities valuation.” This question asked students to compute yield to maturity of a coupon bond. Students may not have been given enough practice to solve similar problems which reduced their performance. Thus, more practice problems should be given in future semesters.

Students also scored poorly (i.e., only 35% correct) on one of two questions covering “risk and return concept.” This difficult question relies on students’ understanding of CAPM. This model is covered extensively in FIN 432 and is only reviewed briefly in FIN 435. The 432 course should be taken prior to 435. However, many students appear to take the two courses in the same semester which would reduce their understanding of CAPM. Additional coverage of CAPM in FIN 435 should help bolster student performance in the SKA “risk and return concept.”

Marketing 304, Introduction to Marketing Management

In previous years, embedded measures in MKT 304 captured student performance on four course learning goals –marketing principles and applications; writing and communication; critical thinking; and problem solving. This year, course embedded measures were expanded to also cover the following three learning goals -information management and decision support; global or international issues; and ethical thinking.

The source of embedded measures for the seven course learning goals is the marketing plan or situation audit done as a lab exercise. This is required in all MKT 304 classes. A set of skills, knowledge, and abilities (SKA) is used to evaluate each learning goal for each report sampled. Each SKA is evaluated for having met a professional standard of performance or in need of improvement before the professional standard is met (thus a "0" or "1" is assigned for each SKA for each learning goal -- the sum of the "1's" assigned for each SKA is the score for that learning goal.)

The learning goals each have a different number of SKA. For example, marketing principles and applications has 16 associated SKA and therefore 16 possible points. These points are used to establish performance categories as shown in Table 15. The SKA related to each learning goal are not reported here (to conserve space) but are available upon request.

Table 15. Scale for All Measures in Table 16

Course Learning Goal	Not Good Enough	Good Enough	Very Good
Marketing Principles & Applications	Below 12	12 to 13	14 to 16
Writing & Communication Skills	Below 2	2 to 3	4 to 5
Critical Thinking	Below 6	6	7 to 8
Problem Solving	Below 7	7 to 8	9 to 10
Information Management & Decision Support	Below 4	4	5 to 6
Global or International Issues	Below 1	1	2
Ethical Thinking	Below 2	2 to 3	4

Table 16 provides the performance scores on the course learning goals. Each performance score is the percentage of student reports falling into each performance category for each learning goal. The 100 assessed reports were produced by individual students. There were five sections of the course offered in spring 2005. The analysis sample contains 20 randomly selected marketing plans from each of the five MKT 304 sections. Two faculty members were trained and used to assess each marketing plan. Any discrepancy in judgment on an SKA was discussed and resolved by these two faculty.

The findings suggest that students have been successful in achieving all seven course learning goals. Less than 5% of student reports fall into the category of “not good enough” on any learning goal.

The marketing faculty will continue their efforts to improve students' understanding of synergy and tracking in marketing management, planning, and implementation. This will be achieved through lecture emphasis and lab exercises.

Marketing 304 is required of all students in the BSBA, ACCT, and IS programs. The course is designed to increase students' knowledge of marketing principles and applications. However, 304 is also particularly effective in promoting student learning in four other areas that are important to the college mission. These include the previously established contribution to written

communication skills. Also revealed in this analysis, is the contribution to students' awareness of global or international considerations and to students' understanding of ethical issues. Further, information technology skills are effectively exercised and developed in this course.

Table 16. Embedded Measures for MKT 304

Course Learning Goal	Linkage to Program Learning Goals	Not Good Enough	Good Enough	Very Good
Marketing Principles & Application	Basic business concepts	2%	35%	63%
Writing & Communication Skills	Communication skills	0%	0%	100%
Critical Thinking	Critical thinking	1%	16%	83%
Problem Solving	Problem Solving	3%	12%	85%
Information Management & Decision Support	Information technology skills	0%	8%	92%
Global or International Issues	Global context of business	0%	0%	100%
Ethical Thinking	Ethics	0%	2%	98%

Management 360, Organizational Theory

This course is required of all students in the BSBA, ACCT, and IS programs. The five course learning goals, their linkage to program learning goals, and the skills, knowledge and abilities, and the results of embedded measures obtained from 260 students in three sections of MGT 360 are summarized in Table 17.

The embedded measures were derived from common multiple-choice questions on the midterm and final examinations. The questions were grouped according to the learning goals covered by the question. To answer each question correctly, students must have certain skills, knowledge, and abilities, as shown in column 3 below. The percentages of correct answers on the questions corresponding to each learning goal are also given in Table 17. The results are grouped into the performance categories shown in Table 18.

From Table 17, it appears that students in this course are either "good enough" or "very good" in achieving all five of the course learning goals.

The Management Department is currently working on refining the learning goals for this course.

Table 17. Embedded Measures for MGT 360

Course Learning Goal	Linkage to Program Learning Goals	Skills, Knowledge, and Abilities	Not Good Enough	Good Enough	Very Good
Varied roles & competencies required of managers	Understand & apply basic business concepts	Role of top managers			96%
Environmental forces & how they influence today's organizations		Strategies of Multinational firms		75%	
Major political, legal, & cultural influences that affect managing in a global economy	Global context of business	Trade laws		87%	
Forces influencing ethical judgments & conduct within organizations	Ethics	Ethical decisions		72%	
Basic elements & major behavioral concepts of the four functions of management: planning organizing, leading & controlling	Understand & apply basic business concepts	Knowledge of group dynamics		80%	

Table 18. Scale for All Measures in Table 17

Performance on SKA	Outcome
Less than 70%	Not good enough
More than 70% but less than 90%	Good enough
90% or more	Very good

Systems and Operations Management 306, Operations Management

This course is required of all students in the BSBA, ACCT, and IS programs. The course learning goals, their linkage to program learning goals, the skills, knowledge and abilities (SKA), and the results of embedded measures obtained from 293 students in most sections of SOM 306 are summarized in Table 19.

Table 19. Embedded Measures for SOM 306

Course Learning Goal	Linkage to Program Learning Goals	Skills, Knowledge, and Abilities	Not Good Enough	Good Enough	Very Good
Knowledge of the basic concepts of operations management	-Understand and apply basic business concepts	-Understand the role of operations management -OM Strategies -Quality management -Planning and control	28%	51%	21%
Analysis of operations management problems	-Problem solving -Information technology skills	-Forecasting -Control charts -Project management -Inventory Control -Scheduling -Layout	27%	49%	24%
Presentation of results	-Problem solving -Written communication	-Demonstrate effective writing -Clear and concise interpretation of results	29%	41%	30%
<i>Weighted Mean</i>			28%	47%	25%

The instruments used to measure student performance in the three course learning goals (listed in Table 19) are the second midterm and the final exam. Essay questions were used to measure students' "knowledge of the basic concepts of operations management." A quantitative problem was used to measure students' "analysis of operations management problems." Finally, a writing problem was used to measure their "presentation of results."

The "weighted mean," in row four above, is determined by taking a weighted average of each student's scores in the three course learning goals. The weights are based on a departmental consensus of the relative importance of each course goal; and are calculated as 40% for "analysis of operations management problems" and 30% each for the other two goals.

The majority of students demonstrated good “knowledge of the basic concepts” and were typically able to define terms and explain ideas. They were also capable of solving analytical problems (i.e., “analysis of operations management problems”). Both of these results were consistent with the previous semester, although the percentages in the “not good enough” category were somewhat higher, likely due to the larger sample size. In the previous semester, only one section was assessed.

The majority of students also scored acceptably in applying operations management ideas and models to problems and presenting the results. In this category, there was improvement from the previous semester, fall 2004. In spring 2005, 29% of the students were in the “not good enough” category. In the previous fall, 43% were in that category. This might have been the result of a departmental effort over the last semester to persuade instructors to spend more time going over methods of reporting analytical results.

These assessment results were reviewed by the Systems and Operations Management Department. The department will again use embedded assessment measures in all sections of SOM 306 in the 2005 fall semester.

Table 20. Scale for All Measures in Table 19

Performance on SKA	Outcome
80 – 100 pts	Very good
50 - 79 pts	Good enough
Less than 50 pts	Not good enough

Systems and Operations Management 307, Data Analysis and Modeling

This course is a requirement for the SOM option and an elective for several other options in the BSBA. The course learning goals, their linkage to program learning goals, the skills, knowledge, and abilities (SKA), and the results of embedded measures obtained from 264 students in all sections of SOM 307 are shown in Table 21.

The instrument used to produce the results in Table 21 is a case study with analysis and recommendations. Each student was provided with a case having different data from that of other students. The purpose of this case is to provide students with the opportunity to demonstrate their knowledge of statistical and stochastic modeling concepts that they have learned during the semester and to evaluate the students’ ability to explain these concepts using simple terminology.

The data in columns four through six are the percentages of students who fell into each SKA performance category. To be classified in a given performance category, a student’s score on the portion of the case analysis associated with a particular SKA must fall within the intervals shown in Table 22. The “weighted mean” in the bottom row below is determined by taking a weighted average of each student’s scores in the three course learning goals. The weights are based on a departmental consensus of the relative importance of each course goal. They are calculated as 40% each for “select the appropriate model” and “analyze data” and 20% for “interpret and explain results.”

Table 21. Embedded Measure for SOM 307

Course Learning Goal	Program Learning Goals	Skills, Knowledge, and Abilities	Not Good Enough	Good Enough	Very Good
Recognize the decision problem and select the appropriate decision support and statistical model	Understand and apply basic business concepts	(1) Define the decision problem, and (2) select appropriate statistical or stochastic model	11%	38%	51%
Students should be able to analyze data to support decision-making in organizations	Information technology skills	Use of software to perform analysis	13%	16%	71%
Interpret and explain the results of their analysis to management	Written communication	Clear communication and interpretation of results	7%	17%	76%
<i>Weighted Mean</i>			11%	23%	66%

On problem recognition and model selection, only 51% were “very good.” On data analysis, 71% were “very good.” This probably illustrates that it is easier for students to learn solution techniques than it is for them to learn more conceptual ideas. That is, it is easier for students to learn mechanical step by step procedures for solving analytical problems than it is for them to learn how to apply the appropriate conceptual models. Students had particular difficulty learning concepts in statistical hypothesis testing; i.e., choosing the appropriate model and probability distribution (Z, t, or p), determining the correct null versus alternative hypothesis, and understanding the concept of significance. The department has discussed this issue and is attempting to correct the problem.

Students scored highest on interpretation and explanation of results as 76% were deemed “very good.” This is probably the result of the instructors meeting with most students to review their papers prior to final submission. Only 7-13% of the students scored “not good enough” on each of the three learning goals.

These assessment results were reviewed by the Systems and Operations Management Department. The department will use embedded assessment measures again in all sections of SOM 307 in the 2005 fall semester.

Table 22. Scale for All Measures in Table 21

Performance on SKA	Outcome
80 – 100 pts	Very good
50 – 79 pts	Good enough
Less than 50 pts	Not good enough

Accounting 351, Intermediate Financial Accounting II

In spring 2005, the accounting program continued to experiment with assessment methods in its 351, Intermediate Financial Accounting II class. There were 122 students enrolled in three sections of 351; taught by two different instructors, Professors Bell and Stone. The classes shared a common syllabus.

The following three accounting specific program learning goals are covered in 351:

1. Each student has a conceptual understanding of external financial reporting.
2. Each student has the ability to apply their conceptual understanding of external financial reporting to real world problems.
3. Each student can research professional literature (i.e., the FARS database) in external financial reporting.

Additionally, the 351 class covers two general program learning goals:

1. Each student shall be able to apply critical thinking skills when analyzing and solving accounting problems.
2. Each student shall be able to effectively communicate complex accounting concepts both orally and in writing. (This goal is assessed in the ACCT 351 COM class.)

Trueblood Case 01-5 was used as the assessment instrument. The case is about a public company that manufactures and distributes branded personal organizers. The case concerns two agreements that Daily Grind entered into with Pacific Sales. The first agreement was a license agreement for Pacific to distribute Daily Grind's products. The second agreement was a supply and royalty agreement for product. The case focused on revenue recognition, a key concept in financial accounting. Specifically, Daily Grind wanted to recognize \$12 million in revenue upon the signing of the license agreement. Students must research the issue and tell the client when and how to recognize revenue for the license agreement. Although all 122 students completed this assignment (and were graded in both 351 and 351 COM), 33 student papers were randomly selected from the sample of 122 papers for assessment.

Participating faculty used the rubric developed by the accounting faculty in fall 2004. The assessment rubric contains five skills, knowledge, and abilities (SKA) to evaluate the course learning goals. That rubric is included in Table 23, and was used to evaluate each student's letter to the client. The explanation below the table indicates the course or program learning goal(s) that correspond to each SKA and provides the traits that students will exhibit if they master the SKA.

Five faculty served as the assessment team. The faculty included:

1. Two who taught the 351 class in spring 2005.
2. One who taught the class in a prior semester.
3. One who teaches 400 level financial accounting classes.
4. One faculty who teaches the ACCT 351 COM class.

One of the team members served as a facilitator and led a norming process. The norming process used three of the papers selected in the sample. After agreement on evaluation of these three papers, the remaining 30 were evaluated by the team. Each person on the team evaluated approximately six papers.

Table 24 contains the assessment results for spring 2005. Roughly three fourths of the students demonstrate critical thinking skills and an ability to apply their conceptual understanding of accounting to real world problems at an acceptable or above average level. Some 70% are able to research the professional literature, and 93% understand financial accounting concepts. While

these results are acceptable to the accounting faculty, the data suggests that three SKAs need additional work:

1. Determine relevant facts
2. Research proper literature
3. State and support solution

The finding that students are unable to 'determine all relevant facts' from a case was communicated to the Gateway coordinator. Gateway is the course where accounting students are first taught to analyze cases. These results suggest that Gateway instructors need to spend more class time identifying all case facts in a systematic fashion.

Additionally, 351 instructors will use the Red Hen Case in fall 2005 to model each aspect of critical thinking. Students will be provided with the grading rubric shown in Table 23. Samples of papers that demonstrate acceptable performance will also be provided.

Table 23. Grading Rubric for Critical Thinking in ACCT 351 Cases

SKA of Critical Thinking	Not Relevant	Not Acceptable	Acceptable	Above Average
1. Determine the Relevant Facts				
2. Identify Accounting Issues				
3. Research Proper Literature				
4. Identify Solution (and alternatives if appropriate in circumstances)				
5. State and Support Solution (Making proper schedule, journal entries, as appropriate)				

- 1) Determine the Relevant Facts: (Critical thinking-reason logically)*
 - a) Student sorts relevant material from irrelevant material
 - b) Student separates opinions from facts
 - c) Student identifies need to collect data

- 2) Identify Accounting Issues (Critical thinking-reason logically and understanding conceptual material)
 - a) Student understands the transaction or events
 - b) Student recognizes items not stated: unperformed duties, hidden contingencies
 - c) Student classifies the issue into a broad category: revenue recognition, matching, etc.

- 3) Research Proper Literature (Research and Critical thinking –reason logically)
 - a) Student researches GAAP and doesn't discuss tax requirements
 - b) Student researches the issue identified in SKA 2
 - c) Student seems to understand the standards researched

- 4) Identify and State Solution (Critical thinking-understand multiple perspectives and applying conceptual understanding)
 - a) States a clear solution that a client can understand; or
 - b) Identifies alternative ways to treat if appropriate.
 - c) Provides supporting statement for conclusion or alternatives that summarizes logic.

- 5) Support Solution (Critical thinking-evaluate and apply conceptual understanding)
 - a) Uses material from case, compares to literature
 - b) Defends solution and/or plausible alternatives clearly with judgment that is based on accounting literature/concepts. (Analyzes deeply enough that each portion of the research is tested, e.g. if extraordinary event needs to be material, unusual, and infrequent, student tests items against all three.)
 - c) Develops necessary supporting schedules, recommends correct journal entry as appropriate.
 - d) Organizes thoughts in a logical order demonstrating deductive or inductive reasoning.

*Note: The corresponding course or program learning goal is in parentheses.

Table 24. Embedded Measures for ACCT 351

Course Learning Goal	Linkage to Program Learning Goals	SKA	Not Acceptable	Acceptable	Above Average
1. Reason Logically	Critical Thinking	Determine relevant facts	23%	70%	7%
		Identify accounting issues	7%	77%	16%
		Research proper literature	30%	50%	20%
Mean for Course Goal 1			20%	66%	14%
2. Understand Multiple Perspectives	Critical Thinking	Identify solution (and alternatives)	7%	77%	16%
3. Evaluation	Critical Thinking	State and support solution	37%	40%	23%
Mean for Critical Thinking (using Goals 1-3)			21%	63%	16%
4. Research Proper Literature	Ability to do Research in Financial Accounting	Research proper literature	30%	50%	20%
5. Identify Accounting Issues	Understand Conceptual Material in Financial Accounting	Identify accounting issues	7%	77%	16%
6. Apply Conceptual Understanding to Real World Problems	Apply Conceptual Understanding to Real World Problems in Financial Acct.	Identify solution (and alternatives)	7%	77%	16%
		State and support solution	37%	40%	23%
Mean for Course Goal 6			22%	58%	20%

ACCOUNTING 351 COM, Communications for Accountants

This two-unit course is required for the B.S. in Accountancy. Students must concurrently enroll into ACCT 351 (Intermediate Financial Accounting II). The two courses share common assignments so it is possible to assess multiple student skills (e.g., critical thinking, research skills, and written communication) in a single assignment. The 351 COM course learning goal is to develop a business style of writing letters, memos, and reports based on accounting situations.

The course embedded measures consist of (1) scores from a pre and post diagnostic exam that measures students' ability to properly apply conventions of English and organize information; and (2) scores from two writing assignments (i.e., pre and post assessment) in response to the assigned ACCT 351 cases.

The diagnostic exam comprises 50 sentences where students correct errors by inserting or deleting proper punctuation, capitalization, number style, abbreviations, plural and possessive forms, spelling, compound words, and grammar usage. In addition, two groups of five sentences each are organized for good paragraph flow. There are 60 possible points.

The pre diagnostic exam is given in the prior semester (i.e., fall 2004) in ACCT 350. Additionally, all students were assigned the *Gregg Worksheets* that accompany the *Gregg Reference Manual*. Rules for the conventions of English are presented with 24 worksheets containing practice sentences. Answer keys are available in the Oviatt Library. Student worksheets were checked for completion during week 5 of the 351 COM course.

The post diagnostic exam is identical to the pre diagnostic exam and is given in 351 COM during week 12 of the spring 2005 semester. The pre and post diagnostic exam scores are not included in the students' final course grade. However, students may not pass ACCT 351 COM if they receive a score below 42.

There are also two written documents that are evaluated (i.e., pre and post assessment). The pre assessment does not count towards the students' grade the first time that it is graded. However, students consider the pre grade, feedback, and comments and write a revision of the pre assessment writing assignment, which counts 5 percent. The post assessment writing assignment counts 10 percent.

The pre assessment writing assignment is a diagnostic letter. Students are asked to write a business letter advising a client about making an investment decision based on the financial statements. Students are asked to discuss the financial statements in terms of reliance and reliability. Students are also told that very little credit will be given for quoting definitions or repeating the information provided in the facts. The client is not a sophisticated businessperson and, therefore, students are asked to communicate in terms that will be easily understood. Students are also provided with information about the format used to write a business letter.

The post assessment writing assignment is from Case 01-5 in the 351 accounting text. Students are asked that their case analysis be prepared in a one to two page memo and to present the required journal entry in an appendix.

The two written assignments –diagnostic letter and case analysis – are evaluated using the *Business Communication Evaluation Form for Written Documents*. Students are given this form prior to the assignments so they understand the skills, knowledge, and abilities that are required for excellent written assignments. Holistic grading is used based on the qualities listed in the evaluation form for the four categories of business writing—(1) audience, (2) organization, (3) clarity, and (4) presentation. Grades between zero and four were given, representing the letter grades F through A.

Table 25 shows the average scores for the pre (diagnostic letter) and post (case analysis) writing assessments; and the average pre and post diagnostic exams scores for 114 students enrolled in three sections of ACCT 351 COM during the spring 2005 semester.

Table 25. Embedded Measures for ACCT 351 COM

Instrument	Mean
Pre Writing Assessment	1.24
Post Writing Assessment	2.79
<i>% of students who score below 2.0 on the post writing</i>	2.6%
Pre Diagnostic Exam	42.8
Post Diagnostic Exam	47.1
<i>% of students who score below 42 on the post exam</i>	15.8%
Sample Size	114

A comparison of mean pre and post writing assessments indicates that student performance rises by more than a full grade point (i.e., 1.55). Additionally, the mean score on the post diagnostic exam is 4.3 points higher than on the pre diagnostic exam. Additionally, 30.7 percent of the students scored below 42 on the pre diagnostic exam compared with only 15.8 percent on the post diagnostic exam.

Prior to the 2004 fall semester, the 351 COM students may not have taken this exam seriously because the score did not affect their final course grade. Since the diagnostic exam scores are not tied to the students' final course grade, a change was made to the course requirements in fall 2004. A score of 42 or above (rather than 40 as in prior semesters) was required for passing the 351 COM course. Furthermore, all students are assigned the *Gregg Worksheets* by the ACCT 350 instructor. After two tries on the post exam during weeks five and 12 of the semester, students scoring below 42 now receive an Incomplete in 351 COM. Students must retake the diagnostic exam until they pass.

The improvement in students' mean post diagnostic exam scores arguably reflects these changes. Moreover, the average pre and post diagnostic exam scores are now above 42 –which is the minimum satisfactory score. The pre exam scores range from 33 to 54 points (out of 60 possible points), while the post exam scores range from 33 to 58 points.

Information Systems 331, Introduction to Information Systems

This course is required of all students in the Information Systems program and is accepted as a substitute course for IS 302. Each student is to acquire a beginning level of understanding in 12 course learning goals. The course learning goals, their linkage to program learning goals, and the results of embedded measures obtained from 56 students in two sections of IS 331 are summarized in Table 26.

Table 26. Embedded Measures for IS 331

Course Learning Goal	Linkage to Program Learning Goals	Group Mean	Not Good Enough	Good	Very Good
In each area, the student acquired a basic understanding of:					
computer hardware	IS Specific # 1	82.1%	3.6%	19.6%	76.8%
computer software; including operating systems and application software		81.1%	5.4%	19.6%	75.0%
information systems components and their interrelations		80.4%	14.3%	12.5%	73.2%
the organizational environment and the role of IS in organizations		76.4%	10.7%	25.0%	64.3%
databases and database management systems	IS Specific # 2	82.1%	0.0%	21.4%	78.6%
telecommunications components and networking		88.6%	1.8%	8.9%	89.3%
appropriate systems development activities leading to effective information systems that support an organization's strategic objectives	IS Specific # 4	70.7%	16.1%	26.8%	57.1%
research in IS literature that will prepare them for life-long learning in the field	IS Specific # 5	58.2%	39.3%	28.6%	32.1%
recognizing and analyzing ethical problems in information system situations and select and defend a course of action	General # 1	77.9%	16.1%	17.9%	66.1%
effective communication of complex information systems concepts orally and in writing	General # 2	68.2%	23.2%	28.6%	48.2%
application of critical thinking and problem-solving skills when analyzing and solving information system problems	General # 3	45.4%	64.3%	21.4%	14.3%
the individual and group dynamics of information systems project teams	General # 4	91.8%	1.8%	5.4%	92.9%

Table 27. Scale for All Measures in Table 26.

Performance on Course Learning Goal ¹	Outcome
Correctly answers 2 or fewer	Not Good Enough
Correctly answers 3	Good
Correctly answers 4 or 5	Very Good

¹ Each of the 12 course learning goals is covered by five multiple-choice questions.

The instrument used to produce the data in Table 26 is a comprehensive component of 60 multiple-choice questions added to the normal unit final examination. Each of the 12 learning goals was covered by five multiple-choice questions on the final. The mean for all 60 (correctly answered) exam questions is 75.2%.

The average of combined “very good” and “good” results for all learning goals is 83.6%. Five of the 12 learning goals have combined scores for “very good” and “good” results of greater than 90%, with one (i.e., “databases and database management systems”) having a combined score of 100%. An additional four learning goals have results between 80% and 90% with one (i.e., “effective communication”) more narrowly missing this combined category at 76.8%. This leaves two learning goals (i.e., “research in IS literature” and “critical thinking and problem solving”) in which there are sizeable percentages of students who scored in the “not good enough” category. “Critical thinking and problem solving” has a larger portion of students scoring in this category (64.3%) than in the combined “very good” and “good” categories. These last two learning goals are of greatest concern in this evaluation.

A total of 39.3% of students had “not good enough” results for questions related to the learning goal “research in IS literature that will prepare them for life-long learning in the field.” The learning being assessed stems from a library research assignment in which students were instructed in online literature search techniques relative to issues in information systems. Three of the five questions ask the student to identify whether the source type is primary, secondary, or tertiary. A fourth question asks students to identify an appropriate publication, among a list, for obtaining information on alternatives for acquisition of information systems. The fifth question asks the student to identify a responsible party for knowledge of the role of information systems in organizations. Unlike questions for most other learning goals that were pulled from earlier examinations, all of these questions were newly developed. Thus, it is not clear whether students’ low performance is explained by the instructor’s lack of emphasis on the importance of this learning goal, his instructional techniques, or the appropriateness of these questions to measure this learning goal. Further analyses of the exam questions and an evaluation of the teaching method are warranted. However, it is clear that some intervention is required to assist students in their ability to understand research in IS literature.

Of even greater concern is the large quantity of “not good enough” results for questions related to the learning goal “application of critical thinking and problem-solving skills when analyzing and solving information system problems.” These five questions consisted of restatements of case issues discussed in class; the results of those cases; and a suggestion of how the case outcome may change when a particular parameter of the case is altered. Similar to the “research in IS literature” questions just discussed, all of these questions were newly developed. Therefore, it is not clear whether students’ low performance is explained by the instructor’s lack of emphasis on the importance of this learning goal, his instructional techniques, or the appropriateness of these questions to measure this learning goal. Further analyses of the exam questions and an evaluation of the teaching method are warranted. However, it is clear that some intervention is required to assist students in using their critical thinking and problem-solving skills when analyzing and solving IS problems.

Individual item analysis finds that eight of the 60 exam questions had nearly half or more of the students providing incorrect responses. These questions were evaluated and found to reflect course content and believed to be appropriate for assessment of the relevant learning goal. Further analysis is needed to validate the questions for assessment of these learning goals.

The final examination was given to all sections (two) of IS 331 offered in spring 2005. Both sections were taught by the same instructor from the same syllabus. Of the students enrolled in the two sections, 56 students took the final examination, one student took the examination early from a version that did not include the 60 assessment questions, who was therefore scored on a slightly different scale, and three students did not attempt the final examination.

The instructor had some apprehension regarding the length of the final. The final contains a large non-comprehensive section from the material covered since the last midterm. This non-comprehensive section consists of six short-answer essay questions and 25 multiple-choice questions, which is roughly the same length as the prior two midterms. Those examinations were administered in one hour and fifteen minutes (the normal class meeting time). It was assumed that the additional forty-five minutes provided in the final examination schedule would be adequate for students to complete the exam. This was borne out as there were only four students still working on the final when time was called in one section and three students still working on it in the other section. This is fairly normal for the examinations given in this course. All other students completed the examination including the comprehensive portion in less than the full time allotted. Additionally, the scores for the non-comprehensive portion of the examination did not deviate noticeably from those of the non-assessment final examinations from previous terms.

Information Systems 435, Business Data Communications and Networking

This course is required of all IS students. The course learning goals, their linkage to IS program learning goals, and the results of embedded measures obtained from 34 students in one section of IS 435 are shown in Table 28.

Table 28. Embedded Measures for IS 435

(A) Course Learning Goals	(B) Program Learning Goals	(C) Not good enough	(D) Good enough	(E) Very good	(F) Mean %	(G) Col. D+E
1. Working understanding of network components & their functions	IS Specific # 2	39%	61%	0%	55%	61%
2. Understand functional characteristics of network architectures		33%	42%	24%	69%	66%
3. Understand systems design & management issues -functionality, cost, performance, and security		12%	70%	18%	70%	88%

The instrument used to produce the measures in Table 28 is the final examination (with multiple-choice and essay questions). The data in columns C through E are the percentages of students who fell into each performance category. To be classified in a given category, a student has correctly answered the number of questions (associated with a particular course learning goal) in the intervals shown in Table 29. Column F in Table 28 shows the percentage of correctly answered questions associated with a particular course learning goal. For example, students correctly answered 61% of the questions that covered learning goal 1 -“network components and their functions.”

Table 29. Scale for All Measures in Table 28

Course Learning Goal	1		2		3	
Number of Questions	5		6		9	
Performance Category	# correct	%	# correct	%	# correct	%
Not good enough	0-2	39	0-3	33	0-4	12
Good enough	3-4	61	4-5	42	5-7	70
Very good	5	0	6	24	8-9	18

Table 29 reports the percentage of students who correctly answered a certain number of questions covering each course learning goal. For example, nine questions covered course learning goal 3 –“understand systems design and management issues.” Some 12% of the students answered four or fewer of the questions (covering goal 3) correctly and were deemed “not good enough;” 70% of the students answered between five and seven of the questions correctly and were deemed “good enough;” while 18% of the students answered eight or nine of the questions correctly and were deemed “very good.”

The results of the data analyses indicate three points. First, the students’ performance on the three course learning goals are at different levels, with performance on goal 3 –“systems design and management issues” being the strongest, and performance on goal 1–“network components and their functions” being the weakest.

Second, the results suggest that further efforts (such as improved learning aids, reinforcement of concepts, and greater emphases on topics related to learning goals) must be made to improve student performance in course learning goals 1–“network components and their functions” and 2–“functional characteristics of network architectures,” and to maintain and improve student performance in course learning goal 3–“systems design and management issues.”

Third, there may be inaccuracy in measurement for learning goals 1 and 2. Learning goal 1 has only five associated questions, and learning goal 2 has only six questions, compared with learning goal 3 which has nine questions. In future assessments, we plan to increase the number of questions covering learning goals 1 and 2 to eight or nine, so the results are more comparable. (Note: The level of question difficulty is largely the same across the three learning goals.)

Economics 160, Principles of Microeconomics

This course is required of all students in the BSBA, ACCT, IS, and ECON programs, and counts as three units toward the Section D (“Social Sciences”) general education requirement. The three course learning goals, their linkage to BSBA program learning goals, and the results of embedded measures obtained from 352 students in four sections of ECON 160 are summarized in Table 30.

Table 30. Embedded Measures for ECON 160

Course Learning Goal	Linkage to Program Learning Goals	Not Good Enough	Good Enough	Very Good
Supply and Demand Analysis	-Problem solving	39.0%		
Specialization and Trade	-Critical thinking	57.6%		
Opportunity Cost	-Understand and apply basic business concepts	41.4%		

The instrument used to produce the data were the midterm examinations given by three economics professors. Common multiple-choice questions were included to cover the three course learning goals. The percentage of correct answers on all questions covering a given learning goal was computed. Student performance was then categorized according to the scale provided in Table 31.

Table 31. Scale for All Measures in Table 30

Performance on course learning goals	Outcome
Below 60% of responses correct	Not Good Enough
60% to 80% of responses correct	Good Enough
80% or more of responses correct	Very Good

The results are fairly disappointing as student performance on all three course learning goals falls into the “not good enough” category. Students’ understanding of “supply and demand analysis” and “opportunity cost” appears particularly weak –with nearly 60% of the students incorrectly answering questions associated with these two goals. It is somewhat surprising to see that students were slightly more successful in answering questions covering “specialization and trade,” because many of these questions require an understanding of “opportunity cost” (as mentioned below).

The results have been made available to the professors participating in the study, the CSUN Department of Economics Chair, and the CSUN COBAE Assessment Director. The professors participating in the study did not find the results to be all that surprising, since student performance on the “embedded questions” (in terms of percentage of questions correctly answered) was not much different than performance on the rest of the exam questions. At this point in time, no changes have been made to ECON 160 as a direct result of these assessment efforts.

Student performance on the individual embedded questions is summarized in Table 32.¹

Table 32. Individual Item Analysis

Question	Course Learning Goal	% Correct	Outcome
1	Opportunity Cost	73.3%	Good Enough
2		28.7%	Not Good Enough
3		14.1%	Not Good Enough
4	Supply and Demand Analysis	36.1%	Not Good Enough
5		43.8%	Not Good Enough
6		37.2%	Not Good Enough
7	Specialization and Trade	71.6%	Good Enough
8		80.4%	Very Good
9		41.2%	Not Good Enough
10		32.4%	Not Good Enough
<i>All Questions</i>		<i>46.8%</i>	<i>Not Good Enough</i>

Questions 1 through 3 are intended to measure students' understanding and ability to apply the concept of "opportunity cost." Questions 4 through 6 are intended to measure students' understanding and ability to apply "supply and demand analysis." Questions 7 through 10 are intended to measure students' understanding of "specialization and trade." (However, some of these questions also require an understanding of "opportunity cost" and the resulting implications on decision making.)

It is not surprising that students performed relatively well on questions 1, 7, and 8. Question 1 tested students on the basic definition of "opportunity cost." In contrast, questions 2 and 3 required an application of opportunity cost to analyze real world decisions. Similarly, questions 7 and 8 tested students on relatively basic concepts related to specialization and trade. Given information regarding the productive abilities of two resources for two competing tasks, question 7 asked students to determine the opportunity cost of one of the resources for one of the tasks (a fairly straightforward computation). Question 8 asked students to determine which resource had an absolute advantage in one of the tasks (again, a fairly straightforward application of absolute advantage). Alternatively, questions 9 and 10 required students to understand the concepts of opportunity cost, comparative advantage, and absolute advantage, *and* to further grasp the relevance of these concepts for optimal decision-making.

¹ Questions 1, 2, and 4 through 10 were asked of: 120 students in Prof. A's class, 104 students in Prof. B's class, and 128 students in Prof. C's class (for a total of 352 students). By the time of his midterm, Prof. B had not covered enough material to be able to include Question 3 on his exam. Thus, question 3 was posed to only the 248 students in the classes of Profs. A and C.

Economics 401, Macroeconomic Theory

This is a required senior level course taken by all students in the Economics program. The course learning goal is to increase students' understanding of aggregate economic growth and fluctuations. Emphasis is placed on the microeconomic foundations of macroeconomic behavior.

Much of the analysis done in this class allows the student to practice general program learning goal # 1 -quantitative skills. The class uses graphs and algebra in macroeconomic analysis. The class also provides students with an opportunity to demonstrate mastery of three economic specific program learning goals. These include goal # 5 -understand key macroeconomic measures of economic activity; goal # 7- express economic concepts both intuitively and more formally; and goal # 9 -understand the impact of monetary and fiscal policies on macroeconomic variables.

Program learning goals # 5 and # 9 represent a standard part of any macroeconomics class. Macroeconomic measurement issues are covered during the first two weeks of the class. Macroeconomic variables such as gross domestic product, the consumer price index, and the unemployment rate are used throughout the course. These variables represent basic knowledge needed to conduct macroeconomic analysis. The impact of monetary and fiscal policies on macroeconomic variables is a central component of the course learning goal of understanding economic fluctuations. Mastery of this program learning goal provides the student with the knowledge and skills needed to analytically understand stabilization policy issues.

Program learning goal # 7 -express economic concepts both intuitively and more formally - is practiced and ultimately demonstrated throughout the course. Most economic ideas are developed both verbally and graphically (some algebra is used).

On the midterm exam, an essay question was asked that required the student to demonstrate mastery of goals # 7 and # 9. The exam question was "Carefully explain Ricardian equivalence. Use the intertemporal consumer choice model to illustrate it. In a Ricardian world, what impact would a budget deficit (a tax cut holding spending constant) have on real interest rates?" The first part of the question requires the student to intuitively describe the concept and its problems or limitations. The second and third parts of the question required a more formal (graphical) treatment of the concept. Student answers to this midterm essay question were used to produce the assessment data.

The course learning goal, its linkage to four program learning goals, and the results of embedded measures from 28 students in one section of ECON 401 are summarized in Table 33. The scale in Table 34 was used to classify student performance on the course learning goal.

Table 33. Embedded Measures for ECON 401

Course Learning Goal	Program Learning Goal	Not Good Enough	Good Enough	Very Good
Aggregate Economic Growth and Fluctuations	-Quantitative skills	32.1%	39.3%	28.6%
	-Key macroeconomic measures			
	-Express economic concepts both intuitively and more formally			
	-Impact of monetary and fiscal policy on macro variables			

Table 34. Scale Used for All Measures in Table 33

Performance on Course Learning Goal	Outcome
Less than 55%	Not good enough
More than 55% but less than 75%	Good enough
More than 75%	Very good