

General Education Program Assessment Report (Fall 2008- Spring 2011)

Date of report: **February 6, 2014**
[Table of Contents](#)
[Collapse All](#)

About this Improvement Project

Settings

Improvement Project Place: General Education

Current Assessment Planning Cycle

* Select Assessment Planning Form [2009-2010] Academic

* Status of Assessment Plan Planning = Approved; Improvement = Approved

* Public? Yes

Assessment Program Information

* Program Name: General Education Program Assessment Report (Fall 2008- Spring 2011)

Contact Name: Alan Pratt

Contact Email: pratta@erau.edu

Contact Phone: 383 226 7779

Changes to Assessment Organization, Processes, Participants in Past Year (optional) General Education Committee

Ad Hoc Improvements in Past Year (optional)

Additional Information (optional) Attached is the Gen Ed Assessment Report for the first three-year cycle, Fall 2008 - Spring 2011.

It includes a summary of the three-year plan, results, analysis, and recommendations with sample outline, report, indicator courses, etc.

The report also includes a **list of improvements to the General Education Program**.

A Daytona Beach Campus Gen Ed Institutional Archive with complete assessment plans, reports, and follow-up reporting is maintained on the General Education Committee's Gen Ed Org web page.

Attach File(s) (optional)

Attachments	Type
General Education Assessment.docx	Attachment

Program Mission Statement

* Program Mission Statement

Constituting nearly one-third of all Embry-Riddle degree programs with over 4600 students enrolled, the General Education Program reflects the faculty's collective judgement about what all students should know. The General Education Program and the Major Program of every baccalaureate degree constitute a single, integrated curriculum.

General Education Program Mission

Recognizing its general and special missions in education, Embry-Riddle Aeronautical University embraces a General Education Program. This course of study ensures that students possess the attributes expected of all university graduates. The General Education Program enables students, regardless of their degree program, to understand the significance of acquiring a broad range of knowledge.

Throughout the General Education Program, students gain and enhance competence in written and oral communication. They practice reasoning and critical thinking skills and demonstrate computer proficiency. As students engage in this course of study, they familiarize themselves with and investigate ideas and methodologies from several disciplines. These include the arts and humanities, the social sciences, economics, the natural sciences and mathematics. The program also helps students recognize interrelationships among the disciplines.

Promoting the appreciation of varied perspectives, the General Education Program provides intellectual stimulation, ensuring that students are broadly educated. This course of study empowers students to make informed value judgments, to expand their knowledge and understanding of themselves, and to lead meaningful, responsible, and satisfying lives as individuals, professionals, and concerned members of their society and the world. Over 4500 students are enrolled in the General Education Program at Daytona Beach.

Alignment of Program Mission Statement to University Mission

Select checkboxes below for all of the appropriate elements below that indicate how your program aligns with the University Mission Statement.

University Mission Statement:

Embry-Riddle Aeronautical University is an independent, nonsectarian, non-profit, coeducational university with a history dating back to the early days of aviation. The university serves culturally diverse students motivated toward careers in aviation and aerospace. Residential campuses in Daytona Beach, Florida, and Prescott, Arizona, provide education in a traditional setting, while an extensive network of learning centers throughout the United States and abroad serves civilian and military working adults through ERAU-Worldwide.

It is the purpose of Embry-Riddle to provide a comprehensive education to prepare graduates for productive careers and responsible citizenship with special emphasis on the needs of aviation, aerospace, engineering and related fields. To achieve this purpose, the university is dedicated to the following:

Degree Programs	Yes
Academic Excellence	Yes
Responsible Graduates	Yes
Effective Educational Programs	Yes
Promote Ethical Behavior	Yes
Research	Yes
Student Personal Development	Yes

System Information

Last Modified Date	Tuesday, September 4, 2012 1:21:34 PM EDT
Last User to Modify	pratta

Improvement Project Objectives

Name	Description	Status	Public
Apply knowledge of Mathematics			No
Construct Effective Written Documents			No
Economic Principles			No
Ethical Responsibility			No
History			No
Oral Communication			No
Scientific Enquiry			No

[^ Back to top](#)

Improvement Project Objectives

⤴ [Apply knowledge of Mathematics](#)

Select Outcome from Master List of Outcomes

Instructions: Below, click the "BROWSE" button to:

1. (REQUIRED) Select an outcome to assess from Master List of Program Outcomes ("BROWSE" -> "Master List of Program Outcomes" -> "GO" button).

2. (OPTIONAL) Align outcome with any other applicable standards such as AABI, ABET, General Education Outcomes: ("BROWSE" -> "Standards" -> "GO" button).

Select Outcome to
Assess from Master List
of Outcomes and Align to
any Applicable Standards

Outcome Title

✳ Outcome Title Apply knowledge of Mathematics

Assessment Measures, Criteria for Success and Results

Assessment Outcome Title

Outcome Title Apply knowledge of Mathematics

Attachments

Measurement One

✳ Means of Assessment Exam in non-culminating course(s)

Description of 'Other'
Means of Assessment (if
applicable) **Assessment for Second and Third Years Courses**
Pre and Post Tests for MA 112 College Mathamatics for Aviation II

Details of Assessment
Measurement (Timeframe
of Data Collection,
Participants/Roles, etc.) Collection of data: 2009-10 by Course Monitors:
All Ma-112 students were given a pre-test at the beginning of the fall 2009 semester. The pre-test contained the concepts listed above under learning outcomes. These same concepts will be evaluated again on the MA 112 common final exam given at the end of the fall term.
The course monitor will identify a randomly selected sampling from all MA-112 students that took the pre-test. The monitor, along with other faculty who currently teach, or have previously taught, MA 112, will conduct an item analysis of students' post-test results to determine if student understanding of selected learning outcomes has increased.

✳ Criterion for Success MA 112: Based upon an evaluation of randomly selected pre and post tests, 75% of the students will demonstrate that they are adequately prepared for the subsequent courses, based upon an increased ability to work with vectors, derivatives and anit-derivatives.

Assessment Results /
Data Collected By looking at the data provided from the pre-test and post-test, it is evident that a significant number of students were able to improve upon their previous knowledge of the subject conveyed in MA 112. Through an increase in the percentage of students answering questions correctly, it is evident that students were able to improve their understanding for the topics held key to the curriculum and thus support the learning outcome initially set forth: "to apply knowledge of college-level mathematics for defining and solving problems." In conclusion, this learning outcome was completed and the goal is deemed successful.

Measurement Two

Means of Assessment Rubric-scored artifact in non-culminating course(s)

Description of 'Other'
Means of Assessment (if
applicable) A common final exam will be developed that maps to specific course learning outcomes. After the exam has been administered to all MA 112 students, randomly selected student exams will be evaluated to discern if students have demonstrated mastery in vectors, derivatives and anti-derivatives.

Details of Assessment The course monitor will convene a group of mathematics faculty to develop a common final

Measurement (Timeframe of Data Collection, Participants/Roles, etc.)

exam that maps to MA112 learning outcomes. This group will identify, within that instrument, items that address course-specific learning outcomes to be assessed in 2009-10. In conjunction with those faculty members, the course monitor will also conduct an item analysis of student performance on the common exam, compile and evaluate the results, and report the results to the General Education Committee.

College Mathematics faculty familiar with MA 112 will assist with the authoring of the common exam and will meet to map the exam questions to specific MA112 learning outcomes. They will, additionally, work with the course monitor to evaluate the results.

Criterion for Success

75 % of randomly selected common exams will indicate that students have correctly solved 75% of those items on the common exam that have been mapped to MA112 learning outcomes to be assessed in 2009-2010.

Assessment Results / Data Collected

At the end of the year, a final exam was given in order to judge the overall performance for each student. A key portion of this was to compare the results of students on 4 particular questions, which happen to be the 4 questions from the original pre-test given prior in the semester. The original corresponding question number, number of students who received it correct, and the percentage of students who answered it correct are given in the chart below.

Question	Number of Students Correct	Percentage of Students Correct
1	136	62.67%
2	146	67.28%
3	146	67.28%
4	174	80.18%

By looking at this data, it is evident that the students who remained in the MA 112 program were able to improve their overall success in the key topics, as demonstrated by the improvement of the percentage of students answering correctly on selected questions. The key questions selected to test upon, and thus formed the basis for the curriculum, were instructed in depth to the students in order to provide for a decent foundation for calculus.

Measurement Three

Means of Assessment Rubric-scored artifact in non-culminating course(s)

Description of 'Other' Means of Assessment (if applicable)

In support of this Assessment Plan, this documents summarizes the results of the assessment conducted in Fall 2009. A modified assessment was conducted in Spring 2010 and the results are discussed in this report.

Details of Assessment Measurement (Timeframe of Data Collection, Participants/Roles, etc.)

The Fall 2009 MA 242 final exam contained three questions selected to measure General Education Learning Outcome #1. In keeping with the general education goal (understand some of the important results of scientific inquiry in the natural and life sciences : : :"), applications of calculus skills to scientific problems were selected for this assessment. Specifically, the questions were:

1. A spring obeys Hooke's Law (the force is proportional to the amount the spring is stretched or compressed from its natural length). The natural length of the spring (when it is neither stretched nor compressed) is 4 feet. When the spring is 5 feet long, it produces a force of 20 pounds. Find the amount of work required, in foot-pounds, to stretch the spring from a length of 6 feet to a length of 7 feet.

2. An object is placed into an oven. It starts to heat up. Let $u(t)$ denote the temperature (in degrees Centigrade) after t minutes. Suppose it turns out that the formula for $u(t)$ is given by:

$$u(t) = 20 + 100e^{2t}$$

Calculate the rate (in degrees per minute) at which the temperature is changing at the point in time when $t = \ln 2$.

3. The population of Mudville increases at a rate proportional to the population at any instant. If the population in 2000 was 24 people and the population grows according to the equation $dP/dt = 0.04P$, estimate the population (to the nearest integer) in the year 2010.

The multiple-choice responses to these questions from 139 students were scanned by the course monitor in December 2009 and the results are summarized in the table below.

Table 1

Student Success on Selected Test Items: Fall 2009

Outcome 1

Number of Proportion of

Question Total Tested correct answers correct answers

1 139 58 0.42

2 139 79 0.57

3 139 77 0.55

The results were poor. The outcome of Question 1 (work) was almost identical to the outcome when the same question was asked in Spring 2000. The outcomes of Question 2 (rate of temperature growth) and Question 3 (population growth prediction) were somewhat worse than the outcomes obtained when these questions were asked in Spring 2002 and 2003 respectively.

Modification of Assessment - Spring 2010

In order to understand the nature of the poor results, it was necessary to modify the questions and repeat the assessment in Spring 2010. First of all, Question 3 was eliminated from the assessment. Although the material tested in Question 3 was relevant to Outcome 1, it did not require any calculus operations and so was not entirely appropriate for an MA 242 assessment. Questions 1 and 2 were modified in a manner that would aid in an analysis of the results of the Fall 2009 test.

Modification of Question 1 for Spring 2010 Test

A spring obeys Hooke's Law (the force is proportional to the amount the spring is stretched or compressed from its natural length). Let x denote the distance (in feet) that the spring is stretched from its natural length. When $x = 1$ the force is 20 pounds. Find the work done (in foot-pounds) to stretch the spring from $x = 2$ to $x = 3$.

The difference between this version of the question and the one given in Fall 2009 was to describe the problem solely in terms of the amount the spring is stretched rather than in terms of the length of the spring. It is likely that some students will confuse the length of the spring with the amount that the spring is stretched in writing down Hooke's Law $F = kx$. The Spring 2010 version of this question was designed to measure how much this confusion contributed to the poor results on the Fall 2009 version.

Criterion for Success

Assessment Results / Data Collected

There are two aspects of both questions selected for assessment. The first is the use of mechanical skills and algorithms:

1. Can the student successfully calculate the integral or derivative required to solve a calculus problem?

The second aspect is more conceptual.

2. Can the student recognize that calculating the integral or derivative is relevant to the problem.

For the purposes of assessing success in Learning Outcome #1 (apply knowledge of college level mathematics for defining and solving problems), it is the second aspect that is of greater interest.

For Question 1, simply changing the description from the length of the spring to the amount the spring is stretched improved the success rate from 42% in the Fall to 60% in the Spring. The distinction between the uses of "length of the spring" and "the amount the spring is stretched" is an important but technical difference that applies very specifically to the spring problem. The confusion caused by failing to recognize this distinction confounded the Fall 2009 results. The modification of the question for Spring 2010 has removed this part of the problem, and we may now focus on why only 60 percent of the students were able to get the problem correct. This was a multiple

choice question and a record of the wrong answers of all students was preserved and tallied. One of the wrong choices is obtained if the student ignores calculus altogether

and simply performs the multiplication (force)(distance) instead of performing an integration

R 3

$2 \times dx$. An examination of the wrong choices selected by the students shows that 45 of the 182 students (approximately 25% of the students) made this particular error. This is a fundamental conceptual error. When the topic of work is taught, it is crucial that students understand that (Force)(Distance) is only correct when the force is constant and that when the force is variable, work is calculated by integrating force over distance

R b

$a F(x) dx$. Without this understanding, students will be unable to solve work problems involving inverse square laws of gravitational and electrostatic forces or energy calculations in compression or expansion of a gas. An analysis of the wrong choices selected in the Fall 2009 exam also showed that approximately 25% of the students picked the wrong answer that resulted from multiplying a force by a distance. The results are very consistent despite the fact that there was very little overlap between which instructors taught in Fall 2009 and which ones taught in Spring 2010. This is relevant to Learning Outcome #1. In order to apply knowledge of MA 242 in defining and solving problems, students must recognize when integration required. In this particular question used for assessment, one quarter of the students did not.

The dramatic improvement in the results of Question 2 from a success rate of 57% in Fall 2009 to 80% in Spring 2010 reveals a very similar problem. Please note that the difference in success rate is 23% and this is very close to the 25% conceptualization error rate observed in Question 1. In Fall 2009, students were asked to find a rate of change but in Spring 2010 students were ordered to find a derivative. Thus, approximately one quarter of our students are not understanding that finding a rate of change means calculating a derivative. This is a sobering observation and it implies that these students will have great difficulty in applying the methods of calculus to defining and solving problems in science, engineering or economics where calculus may be relevant. I have spoken with the other MA 242 instructors and we believe that we can improve these particular results. If, for example, we make more use of the phrase rate of change in our lessons, on our midterm exams and on our homework assignments, students would be much likelier to recognize when to use the derivative when solving applied calculus problems. This seems like a worthwhile thing to do. It is also simple to test our students' retention of this concept on our final exam.

However, it is also important to recognize that such an approach is a superficial solution to a more general problem. Calculus has several other key concepts involving derivative, integral and limit that are necessary to apply this subject to science and engineering. This report has uncovered weaknesses in a subset of these concepts. Other deficiencies, outside the scope of this report, still remain. We have a dense curriculum to cover in calculus that requires both conceptual and mechanical masteries. In order to serve the needs of physics and engineering, the curriculum has become even more concentrated in the past year and it will be an ongoing challenge to maintain quality in our freshman calculus courses.

Measurement Four

Means of Assessment

Description of 'Other'
Means of Assessment (if applicable)

Details of Assessment
Measurement (Timeframe of Data Collection, Participants/Roles, etc.)

Criterion for Success

Assessment Results /
Data Collected

Measurement Five and Up

For Outcomes with more than four measurements, indicate all means of assessment that will be used (select all that apply). Then list the details for measurements 5 and up in the areas that follow, numbering them appropriately in each text area, starting with number 5.

Capstone course / senior design project **No**

Exam in non-culminating course(s) **No**

Rubric-scored artifact in non-culminating course(s) **No**

End of course evaluations **No**

Focus group/structured interviews (students, faculty) **No**

ERAU Student Satisfaction Survey **No**

ERAU Graduating Student Survey **No**

ERAU Alumni Survey **No**

ERAU Employer Feedback Survey **No**

National Survey of Student Engagement (NSSE) **No**

Incoming Freshmen Survey (CIRP) **No**

Other national survey **No**

External or internal peer review **No**

Retention / graduation rates **No**

Employment placement / continuing education rates **No**

Other (Please specify below) **No**

Description of 'Other' Means of Assessment (if applicable)

Details of Assessment Measurement (Timeframe of Data Collection, Participants/Roles, etc.)

Criterion / Criteria for Success

Assessment Results / Data Collected

test

Attach Supporting Documents

Improvements**Assessment Outcome Title**

Outcome Title Apply knowledge of Mathematics

Use of Assessment Results

Have assessment results been used to make improvements? **Yes (Select all that apply below, then describe)**

Types of improvementsCurriculum modification(s) **Yes**Pedagogy modification(s) **No**Course sequence altered **No**Technology-related changes **No**Personnel-related changes were made **No**Other **No**

Description of Improvements

The results were poor. The outcome of Question 1 (work) was almost identical to the outcome when the same question was asked in Spring 2000. The outcomes of Question 2 (rate of temperature growth) and Question 3 (population growth prediction) were somewhat worse than the outcomes obtained when these questions were asked in Spring 2002 and 2003 respectively.

Modification of Assessment - Spring 2010

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The difference

between this version of the question and the one given in Fall 2009 was to describe the problem solely in terms of the amount the spring is stretched rather than in terms of the length of the spring. It is likely that some students will confuse the length of the spring with the amount that the spring is stretched in writing down Hooke's Law

to measure how much this confusion contributed to the poor results on the Fall 2009 version.

x denote the distance (in feet) the spring is stretched from its natural length. When $x = 1$, the force is 20 pounds. $x = 2$ to $x = 3$. $F = kx$. The Spring 2010 version of this question was designed

Attach File(s) (optional)

Planned Future Improvements

Indicate and describe any planned improvements. If new funds are required for planned improvements, you will also need to complete the next tab, "Mission Critical Budget Request".

Do assessment results indicate any critical improvements that must be made in the next fiscal year? **Yes - planned improvements require NO NEW FUNDS**

Description of Planned Improvements

I have spoken with the other MA 242 instructors and we believe that we can improve

these particular results. If, for example, we make more use of the phrase rate of change in our lessons, on our midterm exams and on our homework assignments, students would be much likelier to recognize when to use the derivative when solving applied calculus problems. This seems like a worthwhile thing to do. It is also simple to test our students' retention of this concept on our final exam.

However, it is also important to recognize that such an approach is a superficial solution to a more general problem. Calculus has several other key concepts involving derivative, integral and limit that are necessary to apply this subject to science and engineering. This report has uncovered weaknesses in a subset of these concepts. Other deficiencies, outside the scope of this report, still remain. We have a dense curriculum to cover in calculus that requires both conceptual and mechanical masteries. In order to serve the needs of physics and engineering, the curriculum has become even more concentrated in the past year.

Mission-Critical Budget Request

Assessment Outcome Title

Outcome Title Apply knowledge of Mathematics

Mission-Critical Budget Request

Title of Budget Request

Details of Budget Request

Are capital funds
required?

Total Amount of Operating
Funds Requested

Salaries: \$

Duration:

Benefits: \$

Duration:

Professional
Development: \$

Duration:

Computer Hardware: \$

Duration:

Computer Software: \$

Duration:

Other Operating Funds: \$

Duration:

[^ Back to top](#)

Select Outcome from Master List of Outcomes

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Select Outcome to
Assess from Master List
of Outcomes and Align to
any Applicable Standards

Outcome Title

* Outcome Title Construct Effective Written Documents

Assessment Measures, Criteria for Success and Results

Assessment Outcome Title

Outcome Title Construct Effective Written Documents

Attachments

Measurement One

* Means of Assessment Rubric-scored artifact in non-culminating course(s)

Description of 'Other'

Means of Assessment (if
applicable)

Technical Report Writing (COM 221)

The analytical report is being used as the primary document for assessment since it represents the culmination of skills learned throughout the semester as well as the most significant and substantive student work produced during the term.

Composition faculty familiar with Technical Report Writing course goals will serve as COM 221 portfolio readers. After participating in reading calibration sessions, portfolio readers will employ a rubric to determine if students have composed effective analytical reports that demonstrate awareness of audience; attention to details and formatting; incorporation of effective primary and secondary sources; as well as appropriate level of correctness in sentence structure, grammar and usage.

Details of Assessment
Measurement (Timeframe
of Data Collection,
Participants/Roles, etc.)

The course monitor will work with COM 221 faculty to author a rubric by which student work will be evaluated. The course monitor will convene Com 221 faculty, as well as portfolio readers, for one or more calibration sessions, using a sampling of student work, to establish a consensus of how the analytical reports are to be evaluated. The course monitor will also select a random sampling of student portfolios from several sections of the course, schedule and supervise the portfolio evaluation session, and report the results of the assessment to the General Education Committee.

COM 221 Faculty: COM 221 faculty will help to author the rubric by which student work will be evaluated. COM 221 faculty members will gather student portfolios (consisting of the analytical report and related documents) from which the sampling will be chosen.

Portfolio Readers: Com 221 portfolio readers will participate in establishing a consistent evaluation system during one or more calibration sessions, and they will evaluate the selected portfolios.

* Criterion for Success

75% of selected student portfolios will contain effective analytical reports with developed research and appropriate citations.

Assessment Results /
Data Collected

Problem of Individual Accountability

Employing the Analytical Report as the sole document in the portfolios is problematic since the vast majority of Analytical Reports are produced as collaborations. The Portfolio Panel has no way of knowing how much of the report, or which portions, were written by an individual student. As is often the case in collaborative work, one student's work might affect the overall results either positively or negatively (i.e. one student in a group of three writing/editing the work in order to compensate for two students with

inadequate writing skills). For this reason, it is difficult to assess, with any accuracy, the research and analytical abilities or grammatical/structural competencies of students completing Com 221.

Recommendation

Currently, the course outline for Com 221 allows up to 50% of the assignments to involve collaborative work that results in a single grade for all group members. Com 221 is one of only two required courses that are specifically *writing instructive* (Com 122 is the other); therefore, it is of paramount importance that assessment assure individual students have gained writing/researching/analyzing competencies. The Course Monitor, in conjunction with Technical Report faculty, will develop strategies for assessing individual student competencies.

This might be accomplished by developing a uniform coding system whereby students signal which portions of the longer work have been accomplished through individual effort. Another approach might include mandating a higher percentage of individually completed assignments and including those assignments in the portfolios.

Problem of Dearth of Analysis in Analytical Reports

As reported above, more than 50% of the inadequate portfolios failed to meet expectation based upon a dearth of analysis. These inadequate reports were simply research papers, with the bulk of source materials typically cut and pasted from the internet. Currently, many faculty members devote 50% or more of course instruction to developing the Analytical Report. This long document, furthermore, represents a substantial portion of student work and precludes appropriate faculty feedback because the reports are typically collected and graded at the end of the semester.

Recommendation

Since processing faculty feedback is an important means for students to learn writing competencies, the Course Monitor, in conjunction with Technical Report faculty will discuss ways of helping student to demonstrate sufficient analytical and research skills in the course. This might be accomplished by modifying the course outline to require more analytical assignments, including shorter, focused documents due earlier in the term.

Measurement Two

Means of Assessment

Description of 'Other'
Means of Assessment (if applicable)

Details of Assessment
Measurement (Timeframe of Data Collection, Participants/Roles, etc.)

Criterion for Success

Assessment Results /
Data Collected

Measurement Three

Means of Assessment

Description of 'Other'
Means of Assessment (if applicable)

Details of Assessment
Measurement (Timeframe of Data Collection, Participants/Roles, etc.)

Criterion for Success

Assessment Results /
Data Collected

Measurement Four

Means of Assessment

Description of 'Other'
Means of Assessment (if
applicable)

Details of Assessment
Measurement (Timeframe
of Data Collection,
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Criterion for Success

Assessment Results /
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Measurement Five and Up

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ERAU Graduating Student Survey **No**

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National Survey of Student Engagement (NSSE) **No**

Incoming Freshmen Survey (CIRP) **No**

Other national survey **No**

External or internal peer review **No**

Retention / graduation rates **No**

Employment placement / **No**

continuing education rates

Other (Please specify below) No

Description of 'Other' Means of Assessment (if applicable)

Details of Assessment Measurement (Timeframe of Data Collection, Participants/Roles, etc.)

Criterion / Criteria for Success

Assessment Results / Data Collected

test

Attach Supporting Documents

Improvements

Assessment Outcome Title

Outcome Title Construct Effective Written Documents

Use of Assessment Results

Have assessment results been used to make improvements? Yes (Select all that apply below, then describe)

Types of improvements

Curriculum modification(s) Yes

Pedagogy modification(s) No

Course sequence altered No

Technology-related changes No

Personnel-related changes were made No

Other No

Description of Improvements

Recommendation

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Attach File(s) (optional)

Planned Future Improvements

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Do assessment results indicate any critical improvements that must be made in the next fiscal year? No

Description of Planned Improvements

Mission-Critical Budget Request

Assessment Outcome Title

Outcome Title Construct Effective Written Documents

Mission-Critical Budget Request

Title of Budget Request

Details of Budget Request

Are capital funds required?

Total Amount of Operating Funds Requested

Salaries: \$

Duration:

Benefits: \$

Duration:

Professional Development: \$

Duration:

Computer Hardware: \$

Duration:

Computer Software: \$

Duration:

Other Operating Funds: \$

Duration:

[^ Back to top](#)

⤴ Economic Principles

Select Outcome from Master List of Outcomes

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Select Outcome to
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Outcome Title

✳ Outcome Title Economic Principles

Assessment Measures, Criteria for Success and Results

Assessment Outcome Title

Outcome Title Economic Principles

Attachments

Measurement One

✳ Means of Assessment Other (please specify below)

Description of 'Other'
Means of Assessment (if
applicable) Pre- and Post-Test

Details of Assessment
Measurement (Timeframe
of Data Collection,
Participants/Roles, etc.) **BA 220 Marketing** Fall/Spring 2009.
Direct measurement: Pre-test / Post-test administered.

✳ Criterion for Success Mean gain scores will be 70%.

Assessment Results /
Data Collected We compared percentage gain in understanding of five selected questions in two sequential courses: An Economic Survey (EC 200/2009- 4 sections, 176 students) and Marketing (BA 220/2010- 4 sections, 98 students). The results indicated that in examined sequential courses (BA 220) two out of 3 questions were perfected (elasticity of demand and cost categories) and showed significant student gains in understanding of the concepts.

Analysis by the sections in sequential BA 220 course showed percentage gain in all discussed concepts in examined three sections but one.

We repeated the test (five selected previously questions) in BA436 section (19 students) in the fall 2010 to assess the knowledge retention. The results indicated that four questions related to elasticity of demand, cost categories, market equilibrium and inflation showed respective retention level: 95%, 89% , 79%, 74% confirming very good understanding of the examined concepts.

Conclusions & Recommendations

- Pre- and post-tests are valuable to evaluate learning outcomes and provide feedback to help professors to make changes in the implementation of the course activities throughout the semester.
- Evaluating the average of correct answers related to each question provides valuable feedback to the course monitor. Based on the question analysis, the course monitor can examine the most critical questions and indicate the part of the material that needs improvement. If the measurement falls short of the target of the gained knowledge, the course monitor might recommend changing the methods of course delivery.
- The pre-post test constitutes effective measurement of student learning and can be used as a tool of assessing instructional effectiveness of adjunct professors.
- The pre-and post-testing assessments can also be used to measure or assess knowledge retention in sequential courses.

Measurement Two

Means of Assessment

Description of 'Other'
Means of Assessment (if applicable)

Details of Assessment
Measurement (Timeframe of Data Collection, Participants/Roles, etc.)

Criterion for Success

Assessment Results /
Data Collected

Measurement Three

Means of Assessment

Description of 'Other'
Means of Assessment (if applicable)

Details of Assessment
Measurement (Timeframe of Data Collection, Participants/Roles, etc.)

Criterion for Success

Assessment Results /
Data Collected

Measurement Four

Means of Assessment

Description of 'Other'
Means of Assessment (if applicable)

Details of Assessment

Measurement (Timeframe of Data Collection, Participants/Roles, etc.)

Criterion for Success

Assessment Results / Data Collected

Measurement Five and Up

For Outcomes with more than four measurements, indicate all means of assessment that will be used (select all that apply). Then list the details for measurements 5 and up in the areas that follow, numbering them appropriately in each text area, starting with number 5.

Capstone course / senior design project **No**

Exam in non-culminating course(s) **No**

Rubric-scored artifact in non-culminating course(s) **No**

End of course evaluations **No**

Focus group/structured interviews (students, faculty) **No**

ERAU Student Satisfaction Survey **No**

ERAU Graduating Student Survey **No**

ERAU Alumni Survey **No**

ERAU Employer Feedback Survey **No**

National Survey of Student Engagement (NSSE) **No**

Incoming Freshmen Survey (CIRP) **No**

Other national survey **No**

External or internal peer review **No**

Retention / graduation rates **No**

Employment placement / continuing education rates **No**

Other (Please specify below) **No**

Description of 'Other' Means of Assessment (if applicable)

Details of Assessment Measurement (Timeframe of Data Collection, Participants/Roles, etc.)

Criterion / Criteria for
Success

Assessment Results /
Data Collected

test

Attach Supporting Documents

Improvements

Assessment Outcome Title

Outcome Title Economic Principles

Use of Assessment Results

Have assessment results been used to make improvements? Yes (Select all that apply below, then describe)

Types of improvements

Curriculum modification(s) No

Pedagogy modification(s) No

Course sequence altered No

Technology-related changes No

Personnel-related changes were made No

Other No

Description of
Improvements

The target objective is a gain in knowledge between the pre and post test results of 15%. The results of the pre-and post- tests in the four sections of BA 220 showed increase in understanding of the economic concepts. The data indicates the percentage gain in the economic knowledge of 98 students using percentages of correct answers. The knowledge gain based on the average of the correct answers in four BA 220 sections was 4%. (17%, 1%, 0% and 5%)

Recommendations

Pre- and post-tests are useful not only to evaluate learning outcomes, but they also provide feedback to help professors to make changes in the implementation of the course activities throughout the semester.

Evaluating the average of correct answers related to each questions provides valuable feedback to the classroom instructor. Based on the analysis of individual questions, the instructor can examine the most critical questions and indicate the part of the material that needs improvement.

If the measurement falls short of the target of the gained knowledge the course monitor might recommend the following:

- Suggest focus on a critical part of the material
- suggest change in the methods of course delivery (handouts, quizzes)

Attach File(s) (optional)

Planned Future Improvements

Indicate and describe any planned improvements. If new funds are required for planned improvements, you will also need to complete the next tab, "Mission Critical Budget Request".

Do assessment results indicate any critical improvements that must be made in the next fiscal year? **Yes - planned improvements require NO NEW FUNDS**

Description of Planned Improvements **Follow-up assessment, 2011**
2009 - 2010: Of 176 students tested, gain was 47%, which is below expectations.
2011 Follow-up: Of 103 students tested, gain was 60.63%

Mission-Critical Budget Request

Assessment Outcome Title

Outcome Title **Economic Principles**

Mission-Critical Budget Request

Title of Budget Request

Details of Budget Request

Are capital funds required? **No**

Total Amount of Operating Funds Requested

Salaries: \$

Duration:

Benefits: \$

Duration:

Professional Development: \$

Duration:

Computer Hardware: \$

Duration:

Computer Software: \$

Duration:

Other Operating Funds: \$

Duration:

[^ Back to top](#)

[^ Ethical Responsibility](#)

Select Outcome from Master List of Outcomes

Instructions: Below, click the "BROWSE" button to:

- (REQUIRED)** Select an outcome to assess from Master List of Program Outcomes ("BROWSE" -> "Master List of Program Outcomes" -> "GO" button).
- (OPTIONAL)** Align outcome with any other applicable standards such as AABI, ABET, General Education Outcomes: ("BROWSE" -> "Standards" -> "GO" button).

Select Outcome to
Assess from Master List
of Outcomes and Align to
any Applicable Standards

Outcome Title

* Outcome Title Ethical Responsibility

Assessment Measures, Criteria for Success and Results

Assessment Outcome Title

Outcome Title Ethical Responsibility

Attachments

Measurement One

* Means of Assessment End of course evaluations

Description of 'Other'
Means of Assessment (if
applicable)

Details of Assessment **BA 220 Marketing**
Measurement (Timeframe Spring 2010
of Data Collection,
Participants/Roles, etc.) Indirect Measurement: End of course survey.

* Criterion for Success 75% of the students responding to the survey will indicate agree or strongly agree on a rating scale that the course better prepared them to understand the role of ethical behavior in both business and life in general.

Assessment Results /
Data Collected

Measurement Two

Means of Assessment

Description of 'Other'
Means of Assessment (if
applicable)

Details of Assessment
Measurement (Timeframe
of Data Collection,
Participants/Roles, etc.)

Criterion for Success

Assessment Results /
Data Collected

Measurement Three

Means of Assessment

Description of 'Other'
Means of Assessment (if
applicable)

Details of Assessment
Measurement (Timeframe
of Data Collection,
Participants/Roles, etc.)

Criterion for Success

Assessment Results / **Incomplete**
Data Collected

Measurement Four

Means of Assessment

Description of 'Other'
Means of Assessment (if
applicable)

Details of Assessment
Measurement (Timeframe
of Data Collection,
Participants/Roles, etc.)

Criterion for Success

Assessment Results /
Data Collected

Measurement Five and Up

For Outcomes with more than four measurements, indicate all means of assessment that will be used (select all that apply). Then list the details for measurements 5 and up in the areas that follow, numbering them appropriately in each text area, starting with number 5.

Capstone course / senior **No**
design project

Exam in non-culminating **No**
course(s)

Rubric-scored artifact in **No**
non-culminating
course(s)

End of course evaluations **No**

Focus group/structured **No**
interviews (students,
faculty)

ERAU Student **No**
Satisfaction Survey

ERAU Graduating Student **No**
Survey

ERAU Alumni Survey **No**

ERAU Employer **No**
Feedback Survey

National Survey of Student **No**
Engagement (NSSE)

Incoming Freshmen **No**
Survey (CIRP)

Other national survey **No**

External or internal peer **No**
review

Retention / graduation rates **No**

Employment placement / continuing education rates **No**

Other (Please specify below) **No**

Description of 'Other' Means of Assessment (if applicable)

Details of Assessment Measurement (Timeframe of Data Collection, Participants/Roles, etc.)

Criterion / Criteria for Success

Assessment Results / Data Collected

test

Attach Supporting Documents

[^ Back to top](#)

History

Select Outcome from Master List of Outcomes

Instructions: Below, click the "BROWSE" button to:

- (REQUIRED)** Select an outcome to assess from Master List of Program Outcomes ("BROWSE" -> "Master List of Program Outcomes" -> "GO" button).
- (OPTIONAL)** Align outcome with any other applicable standards such as AABI, ABET, General Education Outcomes: ("BROWSE" -> "Standards" -> "GO" button).

Select Outcome to Assess from Master List of Outcomes and Align to any Applicable Standards

Outcome Title

* Outcome Title History

Assessment Measures, Criteria for Success and Results

Assessment Outcome Title

Outcome Title History

Attachments

Measurement One

* Means of Assessment Rubric-scored artifact in non-culminating course(s)

Description of 'Other' Means of Assessment (if applicable)

Details of Assessment Measurement (Timeframe

International Studies (SS325)

of Data Collection,
Participants/Roles, etc.)

Social Science faculty who are not currently teaching the course will serve as SS325, International Studies, portfolio readers to discern if student essays and/or research papers indicate their awareness and understanding of "the historical and contemporary issues that affect societies." The SS325 faculty member and portfolio readers will develop a rubric by which the readers will examine a random sampling of student work.

Timeframe of Data Collection

Spring 2010

Participants and Roles

Course Monitor: The course monitor, SS325 faculty, as well as portfolio readers, will author the rubric by which student work will be evaluated. The portfolio readers will hold one or more calibration sessions, using a sampling of student essays, to establish a consensus of how the essays are to be evaluated. The course monitor will identify a randomly selected sampling of all SS325 students, schedule and supervise the portfolio evaluation session, and report the results of the assessment to the General Education Committee.

SS325 Faculty: The SS325 faculty member will participate in authoring the rubric, as well as gathering student portfolios from which the sampling will be chosen.

Portfolio Readers: Social Science portfolio readers will participate in authoring the rubric, in establishing a consistent evaluation system based upon the calibration session, and in evaluating the selected portfolios.

✳ Criterion for Success

A examination of the students' portfolios will show that 75% of randomly selected students indicate that students can "describe some of the historical and contemporary issues that affect societies."

Assessment Results /
Data Collected

Discussion of Assessment Results

Measurement Approach:

60% of the selected portfolios indicated appropriate author understanding of some of the historical and contemporary issues that affect societies that were being studied.

This percentage does not meet the criterion of success delineated in the Assessment Plan. The Course Monitor and faculty member evaluating these portfolios found the inadequate portfolios to largely result from the students being permitted to pursue topics that did not allow students sufficient opportunities to demonstrate an understanding of historical and contemporary issues that affect societies communicated through the Social Sciences.

Recommendations

Measurement Approach 1:

Based upon the results of this measurement approach, the Course Monitor recommends that the learning outcomes listed for SS 325 be completely modified because most of the present outcomes relate more to geography than historical content. Moreover, faculty who teach SS325 should develop better research assignments that emphasize knowledge of the region, continent or country that is being studied. In the portfolio review, it was apparent that not all students were offered sufficient opportunities through either research papers or out-of-class assignments to demonstrate an understanding of the important historical and contemporary issues that affect societies communicated through the Social Sciences.

Measurement Two

Means of Assessment Rubric-scored artifact in non-culminating course(s)

Description of 'Other'
Means of Assessment (if
applicable)

Details of Assessment
Measurement (Timeframe
of Data Collection,
Participants/Roles, etc.)

Globalization and World Politics SS 337**Means of Assessment**

Social Science faculty who are not currently teaching the course will serve as SS337, Globalization and World Politics, portfolio readers to discern if student tests, essays and research papers indicate their awareness and understanding of “the historical and contemporary issues that affect societies.” The SS337 faculty member and portfolio readers will develop a rubric by which the readers will examine a random sampling of student work.

Further Description:**Timeframe of Data Collection**

Spring 2010

Participants and Roles

Course Monitor: The course monitor, SS337 faculty, as well as portfolio readers, will author the rubric by which student work will be evaluated. The portfolio readers will hold one or more calibration sessions, using a sampling of student tests, essays and research papers to establish a consensus of how they are to be evaluated. Portfolio will identify a randomly selected sampling of all SS337 students, schedule and coordinate the portfolio evaluation session, and report the results of the assessment to the General Education Committee.

SS337 Faculty: The SS337 faculty member will participate in authoring the rubric, as well as gathering student portfolios from which the sampling will be chosen.

Portfolio Readers: Social Science portfolio readers will participate in authoring the rubric, in establishing a consistent evaluation system based upon the calibration session, and in evaluating the selected portfolios.

Criterion for Success

An examination of the students' portfolios will show that 75% of randomly selected students indicate that students can “describe some of the historical and contemporary issues that affect societies.”

Assessment Results /
Data Collected

Success in this measurement approach, as stipulated in the Gen Ed Assessment Plan, indicated that 80% of selected SS 337 student portfolios would contain at least one essay that signals the author's understanding of some of the historical and contemporary issues that affect societies that were being studied. As **Figure 3** illustrates, 60% of the portfolios were assessed as showing “Distinction,” 20% as

“Satisfactory,” and 20% were assessed as “Unsatisfactory.”

Discussion of Assessment Results and Recommendations

Discussion of Assessment Results

Measurement Approach:

80% of the selected portfolios indicated appropriate author understanding of some of the historical and contemporary issues that affect societies that were being studied.

This percentage meets the criterion of success delineated in the Assessment Plan.

Recommendations

In view of the results of this assessment it is recommended that SS337 be maintained.

Measurement Three

Means of Assessment

Description of 'Other'
Means of Assessment (if applicable)

Details of Assessment
Measurement (Timeframe
of Data Collection,
Participants/Roles, etc.)

Criterion for Success

Assessment Results /
Data Collected

Measurement Four

Means of Assessment

Description of 'Other'
Means of Assessment (if applicable)

Details of Assessment
Measurement (Timeframe
of Data Collection,
Participants/Roles, etc.)

Criterion for Success

Assessment Results /
Data Collected

Measurement Five and Up

For Outcomes with more than four measurements, indicate all means of assessment that will be used (select all that apply). Then list the details for measurements 5 and up in the areas that follow, numbering them appropriately in each text area, starting with number 5.

Capstone course / senior design project **No**

Exam in non-culminating **No**

course(s)

Rubric-scored artifact in non-culminating course(s) **No**

End of course evaluations **No**

Focus group/structured interviews (students, faculty) **No**

ERAU Student Satisfaction Survey **No**

ERAU Graduating Student Survey **No**

ERAU Alumni Survey **No**

ERAU Employer Feedback Survey **No**

National Survey of Student Engagement (NSSE) **No**

Incoming Freshmen Survey (CIRP) **No**

Other national survey **No**

External or internal peer review **No**

Retention / graduation rates **No**

Employment placement / continuing education rates **No**

Other (Please specify below) **No**

Description of 'Other' Means of Assessment (if applicable)

Details of Assessment Measurement (Timeframe of Data Collection, Participants/Roles, etc.)

Criterion / Criteria for Success

Assessment Results / Data Collected

test

Attach Supporting Documents

Improvements

Assessment Outcome Title

Outcome Title **History**

Use of Assessment Results

Have assessment results Yes (Select all that apply below, then describe) been used to make improvements?

Types of improvements

Curriculum modification(s) Yes

Pedagogy modification(s) No

Course sequence altered No

Technology-related changes No

Personnel-related changes were made No

Other No

Description of Improvements

Based upon the results of this measurement approach, the Course Monitor recommends that the learning outcomes listed for SS 325 be completely modified because most of the present outcomes relate more to geography than historical content. Moreover, faculty who teach SS325 should develop better research assignments that emphasize knowledge of the region, continent or country that is being studied. In the portfolio review, it was apparent that not all students were offered sufficient opportunities through either research papers or out-of-class assignments to demonstrate an understanding of the important historical and contemporary issues that affect societies communicated through the Social Sciences.

Attach File(s) (optional)

Planned Future Improvements

Indicate and describe any planned improvements. If new funds are required for planned improvements, you will also need to complete the next tab, "Mission Critical Budget Request".

Do assessment results indicate any critical improvements that must be made in the next fiscal year?

Description of Planned Improvements

[^ Back to top](#)

🏠 Oral Communication

Select Outcome from Master List of Outcomes

Instructions: Below, click the "BROWSE" button to:

- (REQUIRED)** Select an outcome to assess from Master List of Program Outcomes ("BROWSE" -> "Master List of Program Outcomes" -> "GO" button).
- (OPTIONAL)** Align outcome with any other applicable standards such as AABI, ABET, General Education Outcomes: ("BROWSE" -> "Standards" -> "GO" button).

Select Outcome to Assess from Master List of Outcomes and Align to any Applicable Standards

Outcome Title

✳ Outcome Title Oral Communication

Assessment Measures, Criteria for Success and Results

Assessment Outcome Title

Outcome Title Oral Communication

Attachments

Measurement One

* Means of Assessment Rubric-scored artifact in non-culminating course(s)

Description of 'Other'

Speech Communication (COM 219)

Means of Assessment (if applicable)

All Speech Communication faculty will collaborate to develop a rubric to evaluate the organizational structure, persuasive strategies, use of evidence, and delivery skills for the required speech to persuade. At the end of the Fall 2009 term, Speech Communication faculty will view a representative sample of speeches to persuade, chosen at random, and will participate in a calibration session, using the rubric, to assess the presentations. The goal of this session is to achieve consensus concerning evaluation ratings. During the Spring 2010 term, all speech faculty will arrange for all speeches to persuade to be digitally recorded. Using the rubric, a panel of speech faculty will evaluate an appropriate sampling, drawn from various sections.

Details of Assessment Measurement (Timeframe of Data Collection, Participants/Roles, etc.)

Timeframe of Data Collection

Fall 2009 and Spring 2010

Participants and Roles

Course Monitor: The course monitor will lead in the development of the rubric for assessment of persuasive speeches. The monitor will then convene speech teachers to participate in one or more calibration sessions, during which they will evaluate a sampling of persuasive speeches delivered in Fall 2009, based upon the rubric. The course monitor will also collect a random sampling of student speeches from each section of the course during Spring 2010, schedule and supervise the evaluation sessions, and report the results of the assessment to the General Education Committee.

COM 219 Faculty: COM 219 faculty will collaborate to develop a rubric to evaluate persuasive speeches. They will additionally assure that persuasive speeches are digitally recorded during Fall 2009 and Spring 2010 and that they are readily available for evaluation.

COM 219 instructors will also participate in one or more calibration sessions to establish a consensus in evaluation ratings. A small panel of Speech Communication faculty will serve as panelists to evaluate the randomly selected speeches to persuade delivered during the Spring 2010 term.

* Criterion for Success

75% of selected persuasive speeches will have been presented with adequate content (organizational structure, persuasive strategies, use of evidence) and adequate delivery.

Assessment Results / Data Collected

Discussion of Assessment Results

The overall criterion for success in the measurement of student performance cited that 75 percent of the selected persuasive speeches, as indicated in the Gen Ed Assessment Plan for COM 219, would be rated satisfactory or excellent in both content and delivery. Of the selected persuasive speeches, slightly over 75 percent demonstrated adequate presentation of

both content (appropriate organizational structure, persuasive strategies, use of evidence and authorities) and delivery (eye contact, body language, and vocal elements). Thus, the criterion of success is met.

Recommendations

Although the comprehensive results met the criterion laid out in the assessment plan, a detailed analysis of the ratings of individual items on the evaluation rubric revealed areas of concern that must be addressed.

- **Recommendation 1:** The COM219 Course Monitor will work with COM 219 faculty to offer students more instruction in and greater opportunities to practice using evidence and citing sources, as well as improving range and hold of eye contact while speaking.
- **Recommendation 2:** Strategies should be developed to aid COM 219 faculty to strengthen other areas of content and delivery that were found to have 25 percent or higher unsatisfactory ratings. Such strategies might include additional calibration sessions, delivery exercises, and sharing of resources for students at the speech preparation stage.

Measurement Two

Means of Assessment

Description of 'Other'
Means of Assessment (if applicable)

Details of Assessment
Measurement (Timeframe
of Data Collection,
Participants/Roles, etc.)

Criterion for Success

Assessment Results /
Data Collected

Measurement Three

Means of Assessment

Description of 'Other'
Means of Assessment (if applicable)

Details of Assessment
Measurement (Timeframe
of Data Collection,
Participants/Roles, etc.)

Criterion for Success

Assessment Results /
Data Collected

Measurement Four

Means of Assessment

Description of 'Other'
Means of Assessment (if applicable)

Details of Assessment

Measurement (Timeframe of Data Collection, Participants/Roles, etc.)

Criterion for Success

Assessment Results / Data Collected

Measurement Five and Up

For Outcomes with more than four measurements, indicate all means of assessment that will be used (select all that apply). Then list the details for measurements 5 and up in the areas that follow, numbering them appropriately in each text area, starting with number 5.

Capstone course / senior design project **No**

Exam in non-culminating course(s) **No**

Rubric-scored artifact in non-culminating course(s) **No**

End of course evaluations **No**

Focus group/structured interviews (students, faculty) **No**

ERAU Student Satisfaction Survey **No**

ERAU Graduating Student Survey **No**

ERAU Alumni Survey **No**

ERAU Employer Feedback Survey **No**

National Survey of Student Engagement (NSSE) **No**

Incoming Freshmen Survey (CIRP) **No**

Other national survey **No**

External or internal peer review **No**

Retention / graduation rates **No**

Employment placement / continuing education rates **No**

Other (Please specify below) **No**

Description of 'Other' Means of Assessment (if applicable)

Details of Assessment Measurement (Timeframe of Data Collection, Participants/Roles, etc.)

Criterion / Criteria for
Success

Assessment Results /
Data Collected

test

Attach Supporting Documents

Improvements

Assessment Outcome Title

Outcome Title Oral Communication

Use of Assessment Results

Have assessment results Yes (Select all that apply below, then describe)
been used to make
improvements?

Types of improvements

Curriculum
modification(s) Yes

Pedagogy modification(s) Yes

Course sequence altered No

Technology-related
changes No

Personnel-related
changes were made No

Other No

Description of
Improvements

Recommendations

Although the comprehensive results met the criterion laid out in the assessment plan, a detailed analysis of the ratings of individual items on the evaluation rubric revealed areas of concern that must be addressed.

- The COM 219 Course Monitor will work with COM 219 faculty to offer students more instruction in and greater opportunities to practice using evidence and citing sources, as well as improving range and hold of eye contact while speaking.
- Strategies should be developed to aid COM 219 faculty to strengthen other areas of content and delivery that were found to have 25 percent or higher unsatisfactory ratings. Such strategies might include additional calibration sessions, delivery exercises, and sharing of resources for students at the speech preparation stage.

Attach File(s) (optional)

Planned Future Improvements

Indicate and describe any planned improvements. If new funds are required for planned improvements, you will also need to complete the next tab, "Mission Critical Budget Request".

Do assessment results indicate any critical improvements that must be made in the next fiscal year?

Description of Planned Improvements

[^ Back to top](#)

⬆ Scientific Enquiry

Select Outcome from Master List of Outcomes

Instructions: Below, click the "BROWSE" button to:

- (REQUIRED)** Select an outcome to assess from Master List of Program Outcomes ("BROWSE" -> "Master List of Program Outcomes" -> "GO" button).
- (OPTIONAL)** Align outcome with any other applicable standards such as AABI, ABET, General Education Outcomes: ("BROWSE" -> "Standards" -> "GO" button).

Select Outcome to Assess from Master List of Outcomes and Align to any Applicable Standards

Outcome Title

✳ Outcome Title Scientific Enquiry

Assessment Measures, Criteria for Success and Results

Assessment Outcome Title

Outcome Title Scientific Enquiry

Attachments

Measurement One

✳ Means of Assessment Exam in non-culminating course(s)

Description of 'Other'
Means of Assessment (if applicable)

Details of Assessment Measurement (Timeframe of Data Collection, Participants/Roles, etc.) **PS 160 Physics for Engineers II**
Means of Assessment

An on-line pre-test will be administered to representative group of more than 30 students taking PS 160 at the beginning (in September) of the Fall 2009 semester. This will establish a baseline of existing physics knowledge for these beginning physics students. An on-line post-test will be administered to the same group of students taking PS 160 at the end of the Fall 2009 semester (in November), which will assess the student's knowledge gain, by taking the course.

✳ Criterion for Success The physics faculty will examine the results of these pre- and post-tests and develop strategies to enhance the teaching of the identified physics principles that students found most troublesome. It is expected that 75% of the students will show 20% improvement in the post-test results.

Assessment Results /
Data Collected

The averagescore on the pre-test was 8.25, while the average score on the post-test was 8.69so there was an average improvement on the current sample was 0.44. The numberof students whose score on the post-test was better or the same as on thepre-test was 24 i.e. approximately 70%, whiletheir average jumped from 7.2 to 9.5, i.e increased by 32%. So, we can claim thatwe exceeded the expectation.

As thesedata reveal, a sufficient percentage of students correctly answered these testitems, based upon the criterion of success delineated in the AssessmentPlan.

Measurement Two

Means of Assessment

Description of 'Other'
Means of Assessment (if
applicable)

Details of Assessment
Measurement (Timeframe
of Data Collection,
Participants/Roles, etc.)

Criterion for Success

Assessment Results /
Data Collected

Measurement Three

Means of Assessment

Description of 'Other'
Means of Assessment (if
applicable)

Details of Assessment
Measurement (Timeframe
of Data Collection,
Participants/Roles, etc.)

Criterion for Success

Assessment Results /
Data Collected

Measurement Four

Means of Assessment

Description of 'Other'
Means of Assessment (if
applicable)

Details of Assessment
Measurement (Timeframe
of Data Collection,
Participants/Roles, etc.)

Criterion for Success

Assessment Results /
Data Collected

Measurement Five and Up

For Outcomes with more than four measurements, indicate all means of assessment that will be used (select all that apply). Then list the details for measurements 5 and up in the areas that follow, numbering them appropriately in each text area, starting with number 5.

Capstone course / senior design project **No**

Exam in non-culminating course(s) **No**

Rubric-scored artifact in non-culminating course(s) **No**

End of course evaluations **No**

Focus group/structured interviews (students, faculty) **No**

ERAU Student Satisfaction Survey **No**

ERAU Graduating Student Survey **No**

ERAU Alumni Survey **No**

ERAU Employer Feedback Survey **No**

National Survey of Student Engagement (NSSE) **No**

Incoming Freshmen Survey (CIRP) **No**

Other national survey **No**

External or internal peer review **No**

Retention / graduation rates **No**

Employment placement / continuing education rates **No**

Other (Please specify below) **No**

Description of 'Other' Means of Assessment (if applicable)

Details of Assessment Measurement (Timeframe of Data Collection, Participants/Roles, etc.)

Criterion / Criteria for Success

Assessment Results / Data Collected

test

Attach Supporting Documents

Improvements

Assessment Outcome Title

Outcome Title Scientific Enquiry

Use of Assessment Results

Have assessment results No
been used to make
improvements?

Types of improvements

Curriculum No
modification(s)

Pedagogy modification(s) No

Course sequence altered No

Technology-related No
changes

Personnel-related No
changes were made

Other No

Description of Assesment outcome met faculty expectations
Improvements

Attach File(s) (optional)

Planned Future Improvements

Indicate and describe any planned improvements. If new funds are required for planned improvements, you will also need to complete the next tab, "Mission Critical Budget Request".

Do assessment results
indicate any critical
improvements that must
be made in the next fiscal
year?

Description of Planned
Improvements

Mission-Critical Budget Request

Assessment Outcome Title

Outcome Title Scientific Enquiry

Mission-Critical Budget Request

Title of Budget Request

Details of Budget Request

Are capital funds No
required?

Total Amount of Operating
Funds Requested

Salaries: \$

Duration:

Benefits: \$

Duration:

Professional
Development: \$

Duration:

Computer Hardware: \$

Duration:

Computer Software: \$

Duration:

Other Operating Funds: \$

Duration:

[^ Back to top](#)