Course Assessment Handbook

By
William Peirce, revised by Mike Gavin
Coordinator, Academic Outcomes Assessment

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Prince George's Community College

Vera Zdravkovich, Vice President for Instruction
Verna Teasdale, Academic Assistant to the Vice President

Table of Contents, Course Assessment Handbook

I. Introduction

This handbook is for faculty who are involved with course assessment at Prince George's Community College. Course assessment is one element in the college's assessment program. The college's assessment program encompasses:

- General education (assessed by the Academic Profile test)
- Professional programs assessed by accrediting organizations
- Graduates' satisfaction with their education at the college
- Disciplines
- Courses

This handbook is intended to guide course assessment only.

Course Assessment Controlled by Faculty

Because you as a faculty member teach the courses, you are in the best position to know what the course content should be, what students should learn, and how best to determine if they have learned. When you design a course assessment, the information that you receive from analyzing the results can provide valuable insight into how the course can be strengthened to improve student learning.

"Course" versus "Class"

Before getting into the nitty-gritty of course assessment design, a distinction needs to be made between a course and a class; and an explanation is in order about why course grades do not qualify as a course assessment. A course consists of all the classes (sections) being taught; for example, EGL 101, MAT 112. A class is one section of a course. This handbook is about course assessment, not class assessment.

Course Grades versus Course Assessment

Course grades do not provide the same insight that a course assessment does.

- Grades give a global evaluation but do not provide sufficiently detailed information about which course outcomes students are mastering well and which are giving them trouble.
- Course grades alone don't stimulate faculty discussions about how to improve student learning of particular course outcomes.
- Grades sometimes are based on more than mastery of course content; for example, participation, attendance, bonus points.
- Grading standards often vary widely among different instructors and do not indicate the same degree of mastery of course outcomes.
- Grade inflation (easy tests, generous grading, extra-credit bonuses) sometimes presents a misleading indicator of student mastery of course outcomes.

Grades as Part of Course Assessment

Grades on individual tests, assignments, and projects may be incorporated into the assessment process if they contribute to the focus of course assessment. The focus of course assessment is to determine how well students enrolled in a particular course are learning the content that faculty who teach the course agree that students should learn.

Benefits of Course Assessment

Course assessment benefits students when it leads to improved learning of the course content; the faculty benefit as well. The course assessment process provides one of the few opportunities for faculty to discuss course content with each other and, based on the results of an assessment, determine how they can improve student learning in the course. Using assessment results as evidence, instructors might decide to

- Revise the course outcomes to include more higher-order thinking and greater intellectual rigor
- Obtain more consistency in large multi-section courses
- Reduce grade inflation by linking test and course grades to mastery of all outcomes
- Increase contact with adjunct faculty
- Explore active learning strategies and other teaching methods
- Explore other ways of assessing outcomes
- Explore technological enhancements (labs, equipment, CD tutorial, etc.), using the assessment evidence to support a request for increased funding
- Conduct a retreat or workshop for instructors

(See Appendix B for detailed examples of how departments used results to benefit student learning).

Overview of the Course Assessment Process

1. Responsibility for Course Assessment.

Department chairs have a leadership role in the process. They initiate and monitor the assessment of a course from the planning stage to analyzing the results. Faculty teaching subsequent courses should participate in the planning of foundational (101) courses.

2. Course syllabi.

Before the course is assessed, the course objectives on the course master syllabus need to be rewritten as assessable outcomes ("Upon successfully completing the course, students will be able to . . .") and receive the approval of the Academic Outcomes Assessment Committee (AOAC). Check with your department chair to find out if the course outcomes have received approval from the AOAC. If the course assessment process inspires your department to revise the course outcomes on the master syllabus, you do not need to submit them again to the AOAC.

Beginning spring 2005, three new policies were adopted by the AOAC:

1) If a submitted syllabus seems not to require higher-order thinking, the AOAC will ask the instructor(s) proposing the course to contextualize the outcome s within the discipline. The AOAC will certify new courses only when the outcomes, based on contextualization, promise to require critical thinking skills of students that can be measured.

2) If a master syllabus has to be amended to reflect the new directive of requiring higher-order tasks, a department may submit the revised syllabus and the plan simultaneously. Submission of revised syllabi is required only when assessment for the corresponding course is taking place.

The form for submitting plans has been amended so that departments will identify which questions on the assessment tools measure the outcomes requiring college-level, higher-order thinking tasks. The AOAC will begin to ensure that those outcomes are being measured.

3) The AOAC and General Education committees will begin to examine all courses submitted for approval to the Curriculum Committee. The committees will review the proposed courses' outcomes for their measurability, emphasis on higher-order thinking, and, if they are proposed as general education courses, for their correlation with PGCC's Core Learning Outcomes. The approved CLOs appear below and on the AOAC website.

(A rubric that serves as a model for how courses will be measured with regard to those CLOs appears in Appendix A of this booklet.)

Core Learning/General Education Outcomes

These core educational outcomes are intended to provide graduates with the ability to:

- Communicate effectively in standard oral and written English.
- Comprehend, analyze, and interpret written materials.
- Use appropriate methods of quantitative reasoning to understand, interpret, and manipulate numerical data.
- Understand and apply the scientific method.
- Reason abstractly and think critically.
- Recognize core values of various cultures and display sensitivity in a global community.
- Understand the nature and value of the fine, literary, and performing arts.
- Demonstrate informational literacy, and apply technological competencies to access, evaluate, and communicate information.
- Apply ethical standards and value judgments to decision making.

3. Schedule.
Your department has designed a schedule of courses to assess. Departments with separate disciplinary faculty (for example, art and music) assess courses separately and simultaneously.

If the department falls off schedule, a re-scheduling form is available on the AOAC website and should be submitted the semester that the departure occurs.

4. Process.
Departments are assessing one or more courses each semester. The course assessment loop typically takes three semesters:

- First semester: planning the course assessment and obtaining approval by the AOAC
- Second semester: implementing the assessment
- Third semester: analyzing the assessment results and discussing how to improve student learning in the course

Planning the Course Assessment

All the instructors teaching the course—or a committee of instructors if it is a large multi-section course—should participate in planning the course assessment. The **Course Assessment Planning Form** is where you record your plan for assessing a course. It is in the Appendix at the end of this handbook and is also available as a Word document at the AOAC web site at http://academic.pgcc.edu/assessment/index.htm. Just download it into your computer and fill it out in Word. (The AOAC web site has other useful resources for faculty planning a course assessment.) A course assessment plan has three requirements; they all appear on the Course Assessment Planning Form:

1. Determine that all instructors are addressing all the outcomes on the course master syllabus.
2. Conduct an overall course assessment of at least 60-70 % of the outcomes.
3. Use the results to improve student learning.

1. Determine that all instructors are addressing all the outcomes on the course master syllabus.

This is usually done by each instructor indicating which test items or assignments address specific outcomes and then sharing this information with a committee of other instructors in the course or with the chair or course coordinator. The committee, chair, or course coordinator, determines that everyone is addressing all the outcomes.

See Section II, How To Determine That All Instructors Are Addressing All the Outcomes on the Course Master Syllabus.

2. Plan and conduct an overall course assessment by selecting which outcomes to assess and which course-embedded tests, assignments, and projects to use to assess them. Conduct an overall course assessment of at least 60-70 % of the outcomes.

Faculty use students' responses on tests or written or oral assignments in the following ways:

- ✓ Analyzing test answers for all students or for a sample
- ✓ Using a rubric for scoring essay assignments, performances, or projects for all students or for a representative sample

The relevant sections in the Table of Contents are:

3. Use the results to improve student learning. See above, Benefits of Course Assessment and Section IX, How to Use the Results.

II. How To Determine That All Instructors Are Addressing All the Outcomes on the Course Master Syllabus (Item II on the Course Assessment Planning Form)

Follow These Steps
1. Find out how instructors are assessing all course outcomes.
2. Evaluate the tests and assignments.
3. Consider revising the tests and assignments or revising the course outcomes.

1. Find out how instructors are assessing all course outcomes.

All instructors should provide copies of their tests and assignments to the department chair or to the committee assessing the course. On their tests they should indicate which test questions address which outcomes. On assignment and project instructions, they should indicate which outcomes are addressed.

If only a few instructors teach the course, simply share with each other your tests and assignments. If the course has many sections, especially if they are taught by adjunct faculty who can't come to meetings, design a survey in which instructors explain how they assess the outcomes on the course master syllabus. Include a list of the outcomes and ask for details about how they are assessed. A sample generic survey is provided at the end of this section. The sample survey is also available as a Word document at the AOAC web site at http://academic.pgcc.edu/assessment/index.htm. Download it into your computer and revise it in Word.

If a small number of faculty are teaching the course, share your tests and assignments with each other at a single meeting and check to see that everyone is addressing all the outcomes. In a large multi-section course, the department chair, course coordinator, or a committee of faculty reviews the surveys, tests, and assignments to ensure that everyone is addressing all the outcomes.

2. Evaluate the tests and assignments.

Check to see that test questions, assignments, and projects match all the outcomes and require higher order thinking when appropriate. Be guided by Section III, Two Taxonomies of Higher Order Learning: Bloom and Dimensions of Learning.

3. Consider revising the tests and assignments or revising the course outcomes.

Some departments are finding this component of the assessment process very useful. Some valuable exchanges of test questions among full-time and adjunct faculty have taken place in some departments. The result is better test questions in everyone's sections. The passage of time and changes in textbooks may have caused mismatches between outcomes and test questions. The value of sharing tests and assignments is (a) perhaps your department faculty will ascertain that all outcomes are indeed being addressed by all instructors in a satisfactory way, or (b) some instructors might discover that their tests and assignments emphasize some outcomes more than they deserve and that other course outcomes are receiving less attention. This component of the course assessment process might even inspire a revision of the course outcomes.

Another benefit of looking at how outcomes are addressed is discovering whether test questions intended to assess a higher order thinking skill actually do that. When many instructors look closely at their test questions, they realize that they are assessing recall of textbook chapters and lectures—not the higher order thinking skills they intended to address. Section III of this handbook presents Bloom's taxonomy of higher order thinking skills and dimensions of learning—another popular taxonomy of higher order learning. The faculty's discussion of whether all outcomes are suitably addressed might raise the conflict of classroom autonomy versus course integrity. On the one hand, the principle of classroom autonomy supports the right of instructors to determine the content and emphasis of their course. On the other hand, the principle of course integrity supports the right of students to expect that the course they're getting is the course described in the master syllabus; and transfer institutions expect that the course master syllabus accurately describes the course the receiving institution is accepting. Healthy, well-intentioned departments can resolve this conflict in ways that preserve both classroom autonomy and course integrity and encourage innovation without resorting to the extremes of self-indulgence or rigid conformity.

On the next page is a sample generic survey that a department might want to modify to obtain information from all instructors about how they are assessing the course outcomes on the master syllabus. The sample survey is also available as a Word document at the AOAC web site at http://academic.pgcc.edu/assessment/index.htm. Just download it into your computer and revise it in Word.

Review of Item II on Course Assessment Planning Form

1. Are all instructors in all sections addressing all the outcomes on the course master syllabus?
2. Is higher order thinking assessed?
3. Should course outcomes, test questions, or assignments be revised?

Sample Survey to Discover How Course Outcomes Are Assessed by Faculty

Instructions to the faculty member:
As part of the assessment of _____, we are conducting a survey to find out how the outcomes on the course master syllabus are being addressed in all sections. Listed below are the outcomes listed in the master syllabus for _____. Please indicate which of your tests, assignments, and projects assess these outcomes. Provide copies of your tests and indicate for each question which outcome is being addressed. Provide copies of your assignments and project instructions and indicate which outcome is being addressed. If you do not give tests, or assign essays or projects, please indicate that on the form below. Return the completed survey and your tests and assignments to me by [date]. [Or, if everyone will be bringing their tests and assignments to a meeting of all course instructors, specify the date and place of the meeting.]

Signed: _____ Department Chair

[Outcome 1 copied from course master syllabus.] How do you assess this outcome?

[Outcome 2 copied from course master syllabus.] How do you assess this outcome?

[Outcome 3 copied from course master syllabus.] How do you assess this outcome?

[Outcome 4 copied from course master syllabus.] How do you assess this outcome?
[etc.]

Please attach copies of all your tests and assignments indicating which outcomes are addressed by the test questions and assignment instructions. [or bring the tests and assignments to the meeting on date]

If you do not give tests or assign essays or projects, please indicate that below.

Your signature_____
Extension _____

III. Two Taxonomies of Higher Order Learning: Bloom's Taxonomy

Knowledge: Recall of previously learned facts

> Words to use to assess recall: identify, define; describe, state, label, list, match, reproduce.

Comprehension: Understanding what is meant

> Words to use to assess comprehension: give examples of, classify, explain, describe (when applied to a new situation not described in a lecture or the textbook), discuss what would happen if, retell __ _ in your own words, summarize, outline, trace.

Application: Use of previous knowledge to approach new situations or problems

> Words to use to assess application: predict, construct, prepare, produce, show, use, implement, design, show how, how is __ _ an example of, what is the significance of.

Analysis: Separate into component parts

> Words to use to assess analysis: list the components parts of, break down, differentiate, distinguish, diagram, illustrate, outline, subdivide, interpret, compare/contrast.

Synthesis: Putting elements together so as to form a new concept

> Words to use to assess synthesis: adapt, design, compare/contrast, categorize, compile, assemble, rearrange, give evidence for, give reasons for, formulate, infer, generate, integrate, plan.

Evaluation: Judging by criteria

> Words to use to assess evaluation: Develop criteria for, rank, prioritize, explain why you agree or disagree, which is better, appraise, defend, judge, compare and contrast by criteria, review.

Dimensions of Learning

Declarative knowledge: Factual/memorization
Procedural knowledge: How to use a process
Complex thinking: Applying knowledge in a new situation
Information Processing: Synthesizing, evaluating information
Effective Communication: Using language to get a point across

Collaboration and cooperation: Working in a group
Habits of mind: Critical thinking, self-regulation

IV. How to Plan and Map the Course Assessment

Follow These Steps

1. Determine which outcomes on the course master syllabus you will assess.
2. Plan how you will assess the selected outcomes.
3. Decide whether you will look at all students' work or at a sample.
4. Construct a grid that lists the selected outcomes and the kind of learning.
5. Agree on common assessment tools to obtain consistent results.

1. Determine which outcomes on the course master syllabus you will assess.
A minimum of 60-70% of the outcomes on the course master syllabus needs to be assessed.

Among the course outcomes on the syllabus must be college-level, higher-order thinking tasks.* The assessment plan should include an assessment of some or all of the higher-order thinking outcomes.**

The following process was adopted as the one that the AOAC will require beginning fall 2005:

If a master syllabus has to be amended to reflect the new directive of requiring higher-order tasks, a department may submit the revised syllabus and the plan simultaneously. Submission of revised syllabi is required only when assessment for the corresponding course is taking place.

The form for submitting plans will be amended so that departments will identify which questions on the assessment tools measure the outcomes requiring college-level, higher-order thinking tasks.

2. Plan how you will assess the selected outcomes.

Select or develop test questions, assignments, or projects which will be part of the assessment.

3. Decide whether you will look at all students' work or at a sample.

If more than four instructors are involved, you might want to lighten the workload by looking at a representative sample. George Perkins of the math department can assist you in designing a representative sample.

4. Construct a grid that lists the selected outcomes and the kind of learning.

Design a grid that matches the outcomes with the test questions, assignments, and projects that assess them. Note whether your assessment methods address higher order learning. For two well known taxonomies of higher order learning, see section III, Two Taxonomies of Higher Order Learning: Bloom and Dimensions of Learning.

Sample Generic Grid for Mapping the Assessment

Outcomes from Master Syllabus	**How Assessed**	**Learning Skill (Bloom)**
Outcome 1 Test 1	Common questions, A-G	Recall
Outcome 2 Test 2	Common questions H-M	Recall
Outcome 3 Test 3	Common questions N-S	Recall
Outcome 4 Test 4	30-minute exam essay question, scored by rubric	Comprehension, analysis
Outcome 5 Out-of-class essay	Scored by rubric	Comprehension, analysis, synthesis

5. Agree on common assessment tools to obtain consistent results.
Instructors should agree on the course assessment method that will obtain consistent results. Assessment methods that produce consistent data include

- A common final exam
- Agreement among instructors to use designated common test questions that all instructors will score and keep a record of correct and incorrect answers
- Agreement among instructors to use common essay assignments or projects scored by the same rubrics. Student work should be produced under similar conditions; for example, all in-class exam essays should be written in the same amount of time for the same number of points and all out-of-class essays for the same grade weight.

Review of Planning and Mapping

1. Have you selected at least 60-70% of the course outcomes to assess?
2. Does the grid show a good balance of outcomes and enough attention to higher

learning skills?
3. Will you be obtaining consistent data by consistent questions and assignments done under similar conditions?

V. How to Construct Objective Test Questions

Follow These Steps

1. Consider whether objective tests will assess the course outcomes well.
2. Write valid objective questions.
3. Make sure you are assessing higher order learning.

1. Consider whether objective test questions will assess the course outcomes well.

Although objective questions are easy to score and tabulate, you might find that asking students to write short answers, paragraphs, or essays provides a better indication of whether they have mastered the course outcomes. If you do use objective tests, check the level of thinking required to answer the test questions. See section III, Two Taxonomies of Higher Order Learning: Bloom and Dimensions of Learning.

2. Write valid objective questions.

Objective questions should focus on the course outcomes, be unambiguous, and pose clear alternatives.
The basic types of objective test questions are

A. Completion: student adds words, fills in a blank
B. True-false: right/wrong, yes/no, true/false
C. Multiple choice: best or correct answer, incomplete statements, substitutions, negatives, combined responses
D. Matching: match premises with responses

A. Ways to increase the validity of completion questions

- Phrase the item in the form of a question, where possible
- Be clear and specific, with only one way to interpret the blank
- Place the blank toward the end of the sentence
- Don't use verbatim text from the textbook
- Use only one or two blanks; make the answer a single word
- Specify how precise you want the answer
- Avoid irrelevant clues
- Use a scoring key

B. Ways to increase the validity of true/false questions

- Avoid tricky wording
- Avoid using questions where another option is plausible
- Keep statements short; use one idea per sentence
- Phrase statements positively; highlight the word NOT if you use negative statements

C. Ways to increase the validity of multiple-choice questions

- The stem should state the question
- Make the correct choice clear
- Make distractors (incorrect answers) plausible and not ambiguous
- Avoid irrelevant clues
- Put alternatives in logical order; make them similar; se parallel structure
- Avoid paraphrasing the textbook

D. Ways to increase the validity of matching questions

- Make sure the matching items in the two columns are homogeneous
- All responses should be plausible matches for each premise
- Keep the columns short (5-10 items)
- Provide more responses than premises

Sources: PowerPoint presentation by Tamela Heath Hawley, May 22, 2002; Susan M. Brookhart, *The Art and Science of Classroom Assessment: The Missing Part of Pedagogy*, ASHE-ERIC Higher Education Report volume 27, number 1, 1999.

3. Make sure you are assessing higher order learning.
To go beyond merely testing factual recall of textbook or lecture information, carefully construct questions that require interpretation, application, analysis, synthesis, and evaluation. One way of using multiple choice questions is provide information, followed by choices that require higher order thinking to select the correct choice. The following is an example of an objective question that assess the student's ability to interpret data.

Examples of Multiple Choice Questions Requiring Higher Order Thinking

Expectancy Table Predicting College Math Performance from Aptitude Test Scores
Predicted College Math Performance:

Test Scores	Poor	Average	Good	Outstanding
80-99	15%	25%	25%	35%
60-79	17%	28%	32%	23%
40-59	25%	35%	23%	17%
20-39	33%	32%	20%	15%
10-19	45%	28%	18%	9%

1-9	63%	23%	12%	2%

1. What is the probability that a student with an aptitude test score of 80 or higher would perform below average in college math?

(a) 0.15 (b) 0.25 (c) 0.35 (d) 1.00

2. Suppose all students who obtained aptitude scores below 10 were refused admission to college level math courses. For what percentage of them would this have been a poor decision?

(a) 12% (b) 37% (c) 63% (d) 100%

Source: Test Bank questions from Nitko, A. J. and Amedahe F. (2001) Instructor's Manual to accompany *Educational Assessment of Students*, 3rd edition. Prentice-Hall.

Review for Constructing Objective Test Questions

1. Do the objective test question assess the course outcomes well?
2. Are the questions valid?
3. Have you assessed higher order learning?

VI. How to Perform an Item Response Analysis

Follow These Steps

1. Score the tests for each student, note the number of correct answers.
2. Sort tests according to their scores.
3. Group scores by upper 10%, lower 10%, and middle.
4. Chart responses to each item by group.
5. Calculate difficulty and discrimination indexes for each question.
6. Revise test questions if necessary.

The purpose of an item analysis of objective questions is to determine their usefulness in assessing the material and in differentiating among students. If certain questions are missed by even the students who get top scores, the questions should either be revised or the material covered better. If certain questions are marked correctly by everyone, the questions might be too easy or not assessing the course material well. The college's Scantron software automates the item analysis process and provides an item analysis. If you are not using the Scantron tools, here are the steps in the process:

1. Score the tests for each student, note the number of correct answers.
2. Sort tests according to their scores.
3. Group scores by upper 10%, lower 10%, and middle.
4. Chart responses to each item by group.
5. Calculate difficulty and discrimination indexes for each question.

The difficulty index tells you how hard the test question is, based on the percent of students getting the item correct. Calculate the difficulty index by dividing the number of correct answers by the number of students taking the test. Calculate it for the upper 10% and the lower 10%.

$$\text{Difficulty Index} = \frac{\text{Number of Correct Answers}}{\text{Total number of students}}$$

The discrimination index tells you how well the test question distinguishes between those who know and those who don't know. The discrimination index is the difficulty index for the upper group minus the difficulty index for the lower group.

$$\text{Discrimination index} = \frac{\text{Number correct in upper group}}{}$$

Total number in the upper group

Minus

Number correct in lower group

Total number in the lower group

John Ash of the Office of Planning and Institutional Research can help you perform an item analysis.

6. Revise test questions if necessary. Use the discrimination index to identify which test items to revise.

The Scantron printout will also provide a Kuder-Richardson reliability coefficient for the test. The higher this number is, the more likely the test will produce the same results each time it is used. A coefficient of .800 is good; .500 is mediocre.

An analysis of test questions could reveal a variety of potential problems:

- Too easy: not challenging to students or good discriminators between knowing and not knowing the material
- Too hard: the information might not be taught well
- Poor distractors (i.e., wrong options): students in the lower group are not attracted to them as options
- Ambiguous alternatives: distractors that are attractive to upper group; could be close to being true
- Items miskeyed: answer sheet key is wrong
- Blind guessing: all responses are chosen equally by upper and lower group

Source: PowerPoint presentation by Tamela Hawley, May 22, 2002.

Review for Performing an Item Analysis

1. Have you noted the number of correct answers?
2. Have you sorted tests according to their scores?
3. Have you grouped scores by upper 10%, lower 10%, and middle?
4. Have you charted responses to each item by group?
5. Have you calculated difficulty and discrimination indexes for each question?
6. Have you revised test questions if necessary?

VII. How to Write Essay Questions for Tests and Assignments

Follow These Steps
1. Focus on the course outcomes. 2. Write clear instructions.

Many faculty favor essay test questions to assess both factual recall and higher order thinking. Objective test questions can measure both factual recall and higher order thinking, but they assess bits and pieces of what a student knows. Essay questions can ask students to consolidate various strands of the course; well-written instructions can also assess deep learning, rather than surface learning.

1. Focus on the course outcomes.

Write instructions for essays, projects, and performances that focus on the course outcomes. Know what you're looking for. Essay test questions can ask for as little as a paragraph or as much as a five-paragraph essay. Susan Brookhart in *The Art and science of Classroom Assessment* (1999) advises using several restricted short essays rather than a single extended essay. If the course outcome describes higher order thinking, be sure that your essay instructions go beyond asking for mere recall of lectures and textbook chapters. Brookhart's advice for assessing thinking is to ask students to think about something **new**. Ask students to apply principles and information to new situations. For example, an essay task that asks art students to analyze the composition, line, color, light, placement of figures, etc., in two paintings of the Last Supper is a good assessment tool ONLY if the instructor has NOT previous analyzed the same two paintings in a lecture. To assess how well students can analyze the elements of a painting, the painting must be one the instructor has not already analyzed for them. See section III, Two Taxonomies of Higher Order Learning, for a rich variety of ways to assess higher order learning.

2. Write clear instructions.

Make clear whether you are looking for a memory dump, a thesis-driven argument, or fresh insights not covered in class. In general, a thesis-driven answer produced by a sharply focused question is better than asking students to "discuss" a topic. Consider the examples below.

Less Effective	**Improved**
Pick one of the following and write an essay about it: (a) Gothic cathedrals, (b) Charlemagne, (c) the Black Death. Discuss the use of pesticides in controlling mosquitoes.	"There is a connection between the worldview of a culture and the kind of architecture it produces." To what extent does the quotation explain the difference between Romanesque and Gothic churches? What are the pros and cons of using

	pesticides to control mosquitoes?

Source: John C. Bean, *Engaging Ideas: The Professor's Guide to Integrating Writing, Critical Thinking, and Active Learning in the Classroom.* Jossey-Bass, 1996.

VIII. How to Design Rubrics for Scoring Essays, Projects, and Performances

Follow These Steps

1. Decide whether you want a holistic or analytic rubric.
2. Construct a primary trait scale (a rubric).
3. Obtain consistency in instructions and conditions.
4. Norm the scorers.

A scoring rubric applied consistently by faculty teaching the course is a good way to assess essays, projects, and performances. A rubric describes the primary traits of a high-level essay or project, a poor essay or project, and the levels in between. That is, a rubric lists the criteria for an A, a B, a C, etc., or for a score of 6, 5, 4, etc.—depending on how many levels of differentiation are desired. Instructors use the rubric to score the essay, project, or performance.

1. Decide whether you want a holistic or analytic rubric.
An analytic rubric measures each part of the student work separately; a holistic rubric combines them. To illustrate, here are analytic and holistic rubrics to assess Spanish journals in a beginning Spanish course

Analytic Rubric for Spanish Journal	**Holistic Rubric for Spanish Journal**
Comprehensibility 4. Entries are completely understandable. 3. Entries are usually understandable. 2. Entries are difficult to understand. 1. Majority of entries are incomprehensible. **Usage** 4. Although there a few errors, verb tenses, sentence structure, and vocabulary are correctly used. 3. Some use of appropriate verb tenses and correct sentence structure and vocabulary, but incorrect usage or vocabulary interfere. 2. Many errors make comprehension difficult. 1. The majority of entries are incomprehensible. **Risk Taking** 4. Student has taken some chances, employing sentence structures on the edge of what we have been studying. 3. Student writes mostly safe entries, but is generally current with the textbook.	*Note that several traits (comprehensibility, usage, risk taking, and variety of subject and form) have been combined into a single scale.* 4. The content of the journal is comprehensible. Although there are errors, verb tenses, sentence structure, and vocabulary are correctly used. The author has taken some chances, employing sentence structures or expressing thoughts that are on the edge of what we have been studying. The entries are varied in subject and form. 3. There is some use of appropriate verb tenses and correct Spanish sentence structure and vocabulary, but incorrect usage or vocabulary interferes with the reader's comprehension. 2. The reader finds many of the entries difficult to understand, or many entries are simplistic or repetitious. 1. The majority of entries are incomprehensible.

2. Student writes only safe entries, and is not current with the textbook. 1. Student writes only simple structures. **Variety** 4. Entries are highly varied in subject and form. 3. Entries are somewhat varied in subject and form. 2. Entries show only a little variety in subject and form. 1. Entries show no variety in subject and form.	Source of holistic rubric: Barbara Walvoord and Virginia Anderson, *Effective Grading: A Tool for Learning and Assessment,* 1998.

2. Construct a Primary Trait Analysis Scale.
The following advice is taken from Barbara Walvoord and Virginia Anderson, *Effective Grading: A Tool for Learning and Assessment,*1998.

> If possible, work from examples, of past student performance, grading checklists, descriptions of criteria, comments on assignments or tests—anything that has helped you in the past to articulate criteria for students' performances.
>
> 1. Choose an essay, project, or assignment that assesses what you want to evaluate. Make clear your objectives for the assignment.
> 2. Identify the criteria or "traits" that will count in the evaluation. These are nouns or noun phrases, such as "thesis," "eye contact with client," "use of color," or "control of variables."
> 3. For each trait construct a two- to five-point scale. These are descriptive statements. For example, a '5' thesis is limited enough to treat within the scope of the essay and is clear to the reader; it enters the dialogue of the discipline as reflected in the student's sources, and it does so at a level that shows synthesis and original thought; it neither exactly repeats any of the student's sources nor states the obvious.
> 4. Try out the scale with a sample of student work or review with colleagues and revise.

There are many examples of rubrics in Barbara Walvoord and Virginia Anderson, *Effective Grading: A Tool for Learning and Assessment,* 1998, and in Susan M. Brookhart, *The Art and Science of Classroom Assessment: The Missing Part of Pedagogy*, ASHE-ERIC Higher Education Report volume 27, number 1, 1999. A sampler of discipline-specific primary trait assessment scales is available from Raymond Walters College at http://www.rwc.uc.edu/Phillips/Assessment/PTASampler.html.

3. Obtain consistency in instructions and conditions.

Be sure that the instructions given to students and the conditions under which the essays, projects, and performances will be done are the same. The instructions for essays, projects, and performances should not vary among instructors, or there is little point in

tabulating the varied results. Instructors should agree on the wording of the instructions, and all students should produce their essays and projects under similar conditions. All essays, projects, or performances should be done under the same conditions. They should all be assigned as either in-class or out of-class tasks; all should be word-processed or handwritten; all should have the same weight in calculating the course grade so that there is the same incentive to do well; all should be the same length.
The need for consistent instructions can raise the issue of classroom autonomy versus innovation-stifling conformity. Cooperative, well-intentioned departments can resolve this conflict in ways that produce reliable assessment results that will guide the department in its analysis of areas where the course might be improvable.

4. Norm the scorers.

Using the rubrics, course instructors (or a team of instructors) score the students' essays, projects, or performances. Scores of student papers/projects/portfolios by individual faculty members do not provide meaningful data unless the individual scores reflect similar judgments by each rater. The scoring team should continually strive for high inter-rater reliability; 80% is the generally accepted target in the assessment community. It is not easy for faculty to reach similar judgments of student work produced in different sections by students with different instructors using different teaching methods teaching different content inspired by different beliefs about what's important. It takes respect, patience, a spirit of compromise, and a genuine wish to discover how well students are learning what the faculty want them to learn.

Procedure for norming the scorers

A. The scoring team should agree on what the rubrics mean and on the meaning of evaluative words such as "outstanding," "adequate," "acceptable," "unacceptable," "thorough," "well-supported," "complete," and "minimal."

B. The scoring team should hold a norming session by independently scoring the same 10-20 artifacts (samples of students' work) until they agree on the same score at least 80% of the time and are only one number apart when they disagree. To rate as consistently as possible, scorers should discuss their differences in scoring and agree on mutual interpretations of the rubrics, taking notes. Remember that grading (an individual judgment in one's own class) is different from assessment scoring (a team's judgment for assessment purposes). In your own class you can grade however you like; the course assessment effort is a disciplinary communal effort in which everyone cooperates to provide consistent scoring.

Ways to Reach Reliability

- A labor-intensive method: Every paper in the sample is read by two scorers. Scores are averaged if they are one number apart. A third scorer reads papers that are more than one number apart and all three numbers are averaged. If many papers receive different scores from different raters, something is wrong. Repeat step B, above, to norm the scorers again.

- A less labor-intensive method: After reaching 80% agreement or higher in the norming session (step B), the team divides the student papers among themselves and each member scores the papers separately, with each paper getting only one reading from one scorer.
- In both methods, periodically (perhaps every 10-15 papers), the team should jointly score the same five papers to verify that everyone is scoring consistently. If papers receive different scores, discuss the reasons. The goal is to score consistently at least 80% of the time, so these discussions should be repeated as often as needed to maintain a consistent 80% level of reliability.

Raters record the artifact scores and prepare a compilation. To avoid comparisons among instructors, do not record separate scores for different classes. Maintaining separate scores might encourage teaching to the test in an effort to coax students into higher scores.

Review for Designing Rubrics

1. Will a holistic or analytic rubric be of more help?
2. Does the rubric represent the primary traits of the task?
3. Have you obtained consistency in instructions and conditions?
4. Is there a procedure for norming the scorers?

IX. How to Use the Results

The chief purpose of assessing course outcomes is (a) to improve learning by promoting a dialogue among instructors about improving student learning in the course and (b) make improvements in the course as needed. A well-done assessment provides evidence of students' strengths and weaknesses in mastering the various course outcomes.
Ideally, the assessment was planned and implemented well and produced data about areas where students have difficulty mastering some of the course outcomes. For faculty members in the department, interpreting the data is mostly a matter of intuition, experience, and sound judgment. The first time a course is assessed might uncover ways to improve the assessment process the second time around. The data might show some obvious areas to revise a course, or the data might show that the course is satisfactory as currently taught. Using assessment results as evidence, instructors might decide to

- Revise the course outcomes to include more higher-order thinking and greater intellectual rigor
- Obtain more consistency in large multi-section courses
- Reduce grade inflation by linking test and course grades to mastery of all outcomes
- Increase contact with adjunct faculty
- Explore active learning strategies and other teaching methods
- Explore other ways of assessing outcomes
- Explore technological enhancements (labs, equipment, CD tutorial, etc.), using the assessment evidence to support a request for increased funding
- Conduct a retreat or workshop for instructors

X. Resources and Bibliography

Call these people to provide help in the following areas:
Assessment timelines, requirements, due dates and general information about course outcomes assessment

Mike Gavin (AOAC Coordinator) 0588
Verna Teasdale 0767

Verna Teasdale Administrative Liaison Kent Hall, X0767

AOAC liaison to your department

George Perkins Faculty Member of the AOAC, Math Representative
Office: M-3051, X0453

Pat Basili Faculty Member of the AOAC, Physical Sciences Representative Office: Chesapeake, X0780

Lovelle Golden Faculty Member of the AOAC, DVM Representative Office: X0883

Mary Halford Faculty Member of the AOAC, Accounting Representative
Office: X1588

Marianne Grayston Faculty Member of the AOAC, Language Studies Representative
Office: X0943

Bill Peirce Faculty Member of the AOAC, English and Humanities Representative
Office: X0083

Swazette Young Faculty Member of the AOAC, Psychology Representative
Office: X0525

Questions about Sample Size

George Perkins (questions about sample size) 0453

Interpreting results
George Perkins 0453

Designing rubrics
Mike Gavin 0588
Bill Peirce 0083

Norming scorers
Bill Peirce 0083

Determining sample size
George Perkins 0453

Performing an Item Analysis
George Perkins 0453

Useful Books

Bean, John C. *Engaging Ideas: The Professor's Guide to Integrating Writing, Critical Thinking, and Active Learning in the Classroom.* Jossey-Bass, 1996.

Brookhart, Susan M, *The Art and Science of Classroom Assessment: The Missing Part of Pedagogy*, ASHE-ERIC Higher Education Report volume 27, number 1, 1999.

Nitko, A. J., *Educational Assessment of Students*, 3rd edition. Prentice Hall, 2001.

Walvoord, Barbara and Virginia Anderson, *Effective Grading: A Tool for Learning and Assessment,* 1998.

Course Assessment Planning Form, revised 1/2005

Department_____
Date_____
Course Number_____ **Course Title**_____
Number of sections usually offered each fall semester _____ spring semester _____

Instructions: Use this form to plan the course assessment your department will be implementing next semester. Use additional paper as needed. Help with planning the course assessment and completing this form can be found in the *Course Assessment Handbook* at http://academic.pg.cc.md.us/aoac.

I. Attach a copy of the course learning outcomes from the master syllabus.

II. Describe the department's method for ensuring that all instructors of this course are addressing all of the course learning outcomes in their classes (See section II of the *Course Assessment Handbook* for detailed instructions.)

All instructors should address all outcomes in the course master syllabus. Provide the names of the faculty who will be making this determination. (Usually in courses with many sections, the department chair, coordinator, or a faculty committee reviews all instructors' tests, projects, performances, journals, portfolios or in courses with fewer sections, everyone shares their tests and assignments with each other.)

III. Assessment Method. Indicate by a checkmark the method your department will use to assess outcomes and provide the information required. Note: **At least 60-70 % of the outcomes must be assessed.** (See section IV of the *Handbook* for detailed instructions about planning and mapping the course assessment.)

New: Among the course outcomes on the syllabus must be college-level, higher-order thinking tasks, (based on Bloom's taxonomy, above the level of comprehension). The assessment plan should include an assessment of some or all of the higher-order thinking outcomes. (For clarification on Bloom's taxonomy, please see the Handbook, page 9).

A. ___ Test questions. (See section V of the Course Assessment Handbook for detailed instructions about constructing objective test questions.)

___ Match the course outcomes with the test questions used.

___ Describe how the test questions will be used in the course. Two common methods are agreement among instructors to use common questions on their tests throughout the course and/or a common final exam.

___ Describe how you plan to tabulate the results (usually a breakdown by test item of the numbers of students who were successful or unsuccessful on that particular question, compiled for each outcome being assessed).

___ Attach the test questions you will be using. Indicate which outcome each question assesses.

____ Indicate which higher-order thinking outcomes are being assessed by which questions by marking an asterisk by each.

____ Please check here if this is a General Education course.

III. Assessment Method—Continued

B. ___ Significant or representative assignment or project assessed by a scoring rubric. (See section VII of the Course Assessment Handbook for detailed instructions about writing essay questions and rubrics.)

Attach the assignment you will be using.

Attach the rubric that will be used to score the assignment.

C. ___ Another assessment method. Describe.

IV. This assessment method selected will be used (check one):

___ For all students in the course
___ For a representative sample of students. In an attachment, describe your sampling method after consulting with George Perkins, ext. 0453.

V. Describe how the discussion about how the results obtained from the assessment will be used to improve student learning. Check items in the box below. **(**See section IX of the Course Assessment Handbook for suggestions.)

__ Discover areas of students' strengths and weaknesses	__ Explore other ways of assessing outcomes
__ Explore innovative ways to address course outcomes	__ Revise course outcomes
__ Obtain more consistency in multi-section courses	__ Increase contact with adjunct faculty
__ Reduce grade inflation by linking test and course grades to mastery of all outcomes	__ Explore active learning strategies
	__ Other (explain)

Comments:

Signed: Department Course Committee Members _____ _____ _____ _____ _____ _____	**Signed:** Department Chair _____

Send the completed form and attachments by March 10, 2005, to Verna Teasdale, Office of the Vice President for Instruction.

Appendix A

General Education/Core Learning Outcomes	**English 102 Outcomes** Upon successful completion of the course students will be able to:
Communicate effectively orally and in writing standard English	➢ Formulate restricted, unified and precise thesis statements ➢ Organize essay content into introduction, body, and conclusion paragraphs ➢ Compose restricted, unified, and precise topic sentences for paragraphs ➢ Write unified and coherent paragraphs that are well-developed with supporting materials drawn from the literary text ➢ Apply grammar and usage rules correctly ➢ Choose appropriate diction ➢ Write clear, precise sentences
Apply appropriate methods of mathematics to solve problems	
Comprehend and interpret reading materials	Explain basic literary terms in the genre of poetry, fiction, and drama (for example, theme, imagery, rhythm, figurative language, tone, character, plot, etc.)
Understand and apply the methods, principles, and concepts of the natural and social sciences and the humanities	See above.
Understand the nature and value of the fine and performing arts	English 102 requires this.
Use computer technology for communication and information retrieval	Write research-based essays using secondary sources to: ➢ Synthesize several different sources into an essay to support its thesis ➢ Quote, summarize, and paraphrase responsibly within that paper
Recognize and appreciate cultural diversity	Students study the world's literature and write and discuss a diversity of ideas.

Appendix B

Action a department may take after assessment	**How specific courses planned to change their courses after assessment**
Change syllabi to prepare students for the rigor of the course	English 223 Children's Literature professors decided to emphasize the intellectual rigor and copious reading in the class in the syllabus to make students "aware" that the assignments and papers would be difficult.
Revise the course outcomes to include more higher-order thinking, greater intellectual rigor, and/or sufficiency	Many courses have merged similar outcomes, omitted outcomes based on their lack of intellectual rigor, and/or added language to outcomes based on Bloom's Taxonomy of high-order thinking.
Based on results from assessment, add or reduce certain elements of the classroom exercises	Using the equivalent of an item analysis, the DVR 005 faculty noticed that many of the questions answered incorrectly on their assessment test were answered so because students could not "unlock meaning of unknown words" based on prefixes and suffixes. Hence, the faculty will investigate how to emphasize word parts in DVR classes.
Obtain more consistency in large multi-section courses	CIS 185 noticed that consistency in multi-section courses is difficult, given that Largo, Laurel, and Metro Center campuses do not have the same resources. Although this analysis delivers a negative truth, it also is one worth noting.
Reduce grade inflation by linking test and course grades to mastery of all outcomes	Assessment and analysis of Math 119 showed that students' scores on the portion of the exam that was common among all students was not predictive of their final grade. This portion, however, did not count toward the final exam grade. Thus, it was speculated that some students did not take that part of the exam as seriously as the weighted part.
Increase contact with adjunct faculty	Math 119 instructors also suggested that the master syllabus may not communicate the timing in which certain skills ought to be taught and this would present problems, especially to adjunct instructors who are not in contact with faculty as much as full time instructors.
Explore active learning strategies and other teaching methods	In Physical Sciences 121, the instructor has: ➢ Changed the sequence of course topics for better flow

	➢ Introduced additional worksheets for practice on skills ➢ Spent more time discussing processes ➢ De-emphasized memorization
Explore other ways of assessing outcomes	The DVR 005 Developmental Reading/English faculty decided that since they encourage students to annotate their texts, the same strategy ought to be applied when students are being assessed. Because they were not aware of this possibility, the faculty hypothesized, students did not perform to their potential.
Explore technological enhancements (labs, equipment, CD tutorial, etc.), using the assessment evidence to support a request for increased funding CIS	MGT 160 has discussed organizing and cataloguing a library or videos relevant to the course to better support visual learners.
Conduct a retreat or workshop for instructors	Biology 101 examined their course and came up with a plethora of questions. Based on this analysis, the faculty desires to contact an expert in assessment to find where and how to proceed. The faculty emphasizes that their desire to seek further help is linked to their belief in assessment and its ability to enhance student learning.