Student Learning Outcomes Assessment Handbook

Montgomery College
Montgomery County, Maryland

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Student Learning Outcomes (SLO) Assessment Handbook
Montgomery College

Part One-Overview and Background of Outcomes Assessment (OA)

Part One of this Handbook:
1. explains Outcomes Assessment
2. gives the background of Montgomery College's Outcomes Assessment Process
3. explores common concerns about Outcomes Assessment

In recent years, institutions of higher education across the country, and internationally, have recognized that a full commitment to teaching and learning must include assessing and documenting what and how much students are learning and using this information to improve the educational experiences being offered. While there is certainly a strong external drive for Outcomes Assessment, Montgomery College's approach to Outcomes Assessment focuses primarily on improving student learning. In many ways, Outcomes Assessment is a commonsense process that we, as educators, follow already. When we articulate the main goals for a course, check to see whether students achieved them, and then use the results to make our courses better, we're on the way to Outcomes Assessment. Montgomery College's Outcomes Assessment approach takes advantage of what we are already doing by formalizing the process and broadening our individual efforts.

Overview of Outcomes Assessment

What is Outcomes Assessment?

Outcomes Assessment (OA) is the process of collecting information that will tell an organization whether the services, activities, or experiences it offers are having the desired impact on those who partake in them. In other words, is the organization making a difference in the lives of the individuals it serves?

In higher education, at its simplest, Outcomes Assessment has three stages:
1. **defining** the most important goals for students to achieve as a result of participating in an academic experience (outcomes)
2. **evaluating** how well students are actually achieving those goals (assessment)
3. **using** the results to improve the academic experience (closing the loop)

Who benefits from Outcomes Assessment?

One of the great advantages of Outcomes Assessment is that when done in a systematic way, it has benefits for people throughout the institution, from our students to the faculty to the administration.

For students, Outcomes Assessment will:

- communicate clear expectations about what's important in a course or program
- inform them that they will be evaluated in a consistent and transparent way
- reassure them that there is common core content across all sections of a course
- allow them to make better decisions about programs based on outcomes results

For faculty, participating in Outcomes Assessment will:

- help them determine what's working and what's not working in their courses or programs
- facilitate valuable interdisciplinary and intercampus discussions
- provide powerful evidence to justify needed resources to maintain or improve programs
- allow them to tell their story to individuals outside their area (e.g. administrators, employers, prospective students, transfer institutions, politicians)
- provide reassurance that all faculty teaching a particular high demand course agree to address certain core content

For administrators, implementing collegewide Outcomes Assessment will:

- demonstrate an institutional commitment to continually improving the academic programs and services offered by the College
- provide valuable data to support requests for funds from state and local government and private donors
- demonstrate accountability to funding sources
- provide valuable data for academic planning and decision-making
- enable them to inform elected officials, local businesses, and potential donors about the College's impact on our students and our community in a very compelling and convincing way

Finally, systematic Outcomes Assessment is now a **requirement for accreditation** by all higher education accrediting organizations. In fact, two of Middle States' fourteen standards of excellence in higher education speak directly to the importance of creating a culture in which institutional effectiveness and student learning are highly valued by the College community.

Why aren't grades enough?

When faced with the news that it's your discipline's turn for Outcomes Assessment, it is tempting to ask why you can't just look at final grades to determine whether a course is successful. Although counting letter grades is easy, it provides neither consistent nor meaningful information about student success in a multi-section course.

In Outcomes Assessment, the terms "scoring" and "grading" have different meanings. Scoring refers to the process of marking an assessment instrument to get data about how

well the course has done at achieving its outcomes. Grading is the process of marking an assessment instrument for the purpose of assigning a student a grade for the course. Scoring needs to be done consistently across all sections; grading can be done differently in each section if instructors desire. In no way does the Outcomes Assessment scoring process infringe on an instructor's grading.

Unless every instructor teaching a particular course assigns final course grades in exactly the same way (same assignments, same exams, same weights, same grading approach), you cannot be confident that one section's A is the same as another section's A. More significantly, final grades are an aggregate assessment of a student's entire body of work for the course, often including attendance and class participation. Consequently, looking at a distribution of grades will provide little, if any, useful information about the degree to which students are learning those things that instructors deem most important in the course.

Grades do not provide:
- specific information about students' performance on core learning outcomes
- meaningful data across sections
- objective student data which can be used for improvement of student learning or recognition of student achievement

It is critical, however, that students do not approach Outcomes Assessment assignments or exam questions thinking they are of no consequence, as they would likely not take them seriously thus creating a false impression regarding the effectiveness of our courses. Regardless of how instructors grade the instruments, they should communicate to students the value of the outcomes and the instruments used to assess them.

Montgomery College's Outcomes Assessment Approach

What values guide Montgomery College's approach to Outcomes Assessment?

1. Faculty are best suited to determine the intended educational outcomes of their academic programs and activities, how to assess these outcomes, and how to use the results for program development and improvement.

2. Ultimately, every academic unit should be expected to engage in Outcomes Assessment. Outcomes Assessment should not be performed only in selected academic areas of the College.

3. The results of Outcomes Assessment should be used to evaluate the effectiveness of academic programs, academic activities, and student services, and not the performance of individual faculty or staff.

4. Outcomes Assessment should be as simple and manageable as possible. The process cannot become so onerous that it hampers or interferes with the delivery of the educational experience that it attempts to assess and improve.

5. Faculty must use the information collected to develop and improve academic programs, that is, they must "close the loop." If Outcomes Assessment is used primarily as a reporting tool, then this effort will have been deemed a failure.

6. Central and campus administrators must provide leadership and accountability to the process.

7. Outcomes Assessment must be ongoing and performed on a regular basis within each academic area; it cannot be episodic. In essence, it must become an academic habit.

What is Montgomery College's approach to Outcomes Assessment?

There is no one right way to implement Outcomes Assessment. Across the country colleges have proceeded in a variety of ways, each adopting an approach they feel is best suited to the circumstances of their institution.

Within the Outcomes Assessment process at Montgomery College, outcomes have been categorized into two main types: Student Learning Outcomes (SLO) and Student Progress Outcomes (SPO).

S*tudent Learning Outcomes* (SLO) directly describe what a student is expected to learn as a result of participating in academic activities or experiences at the College. They focus on knowledge gained, skills and abilities acquired and demonstrated, and attitudes or values changed. These, of course, are the outcomes that are of most interest to educators, but they are also the most challenging to measure, and may require a number of iterations before the data collected are deemed valid and reliable.

Student Progress Outcomes (SPO)*,* conversely, reflect student progress in course sequences; in transfer, certificate, and degree programs; in majors; and in workplace experiences after they leave Montgomery College. Although not directly descriptive of what a student has learned while at the College, SPO nonetheless provide indirect measures of student learning, as well as describing outcomes to our programs that the students themselves may consider to be most important.

Because of their immediate connection to assessing student learning, the primary emphasis of the current Outcomes Assessment process and this handbook is SLO.

What priorities guide our approach?

Our SLO assessment approach is guided by three priorities:
- directly involving *all* faculty who teach the course being assessed in the assessment process itself
- making the process as unobtrusive as possible in how faculty plan, manage, and deliver their courses

- minimizing potential sources of biased data by maximizing consistency in performing the assessments

What are the key elements of the Outcomes Assessment process that honor these priorities?

<u>Courses should have a set of collegewide common core learning outcomes</u>
Course outcomes are based on and mirror the student learning expectations agreed on by the discipline when the course was last approved by the Collegewide Curriculum Committee. Faculty from the discipline are asked to agree on the most important learning outcomes, three of which will be assessed for that course during each assessment cycle. This does not mean that faculty will be required to teach identical content across the entire course, nor does it dictate how faculty choose to deliver any of the course content to their students. What is expected is that during an assessment cycle, the same course outcomes will be assessed using the same methods regardless of where or how it is taught.

<u>The entire discipline participates</u>
Assessing learning outcomes for courses should be important to all faculty in the discipline. Therefore, the process is structured to engage all discipline faculty directly in the assessment activity, as well as in discussions related to the process. Although this approach may require more effort than sampling specific sections or simply soliciting volunteers, it is more equitable and the participation of all faculty results in a full appreciation of the importance of the core learning outcomes, the worth of assessing them, and the value of coming together for meaningful discussions about both.

<u>Embed assessment instruments into the course</u>
When assessing Student Learning Outcomes in a course, the easiest and least obtrusive way for faculty and students is to weave the assessment instrument (assignment, exam questions, etc.) into the course rather than have an obvious, add-on test or assignment that doesn't blend naturally into the course.

In outcomes lingo, course-embedded assessments are assessments that make use of the actual work that students produce in their courses. The assessments may simply select from work that students do in various courses or may be designed overtly for assessment purposes and then incorporated into the courses. The faculty members teaching the courses give grades to the students, but the work selected for assessment is evaluated based on Student Learning Outcomes.

<u>Ensure consistency through common outcomes, common instrument, common scoring</u>
Faculty members are not expected to teach every section of a multi-section course in exactly the same way. However, the best way to get meaningful and reliable results for Outcomes Assessment is to have consistency on both the outcomes being assessed and the method by which they are assessed. For this process, that means establishing a set of collegewide common core outcomes for a course, assessing three of these in a given

assessment cycle in all sections using a common instrument, and scoring the assessments using a common rubric or scoring approach.

<u>Remove any incentive for individual faculty to bias the results in their favor</u>
It is natural for faculty to be concerned about how assessment data about their students will be reported and used. The College, in a written statement endorsed by the two Executive Vice Presidents, has stated unequivocally that data collected as part of this process will never be reported in a way that would allow it to be linked to an individual student or faculty member, and that assessment results will not be used in the faculty evaluation process. These guarantees, combined with the use of a common assessment instrument and scoring rubric should remove any incentive for individual faculty members to bias the assessment process in order to "make themselves look good."

Common Concerns about Outcomes Assessment

Throughout this handbook, you will find information and advice on how to work through some potential stumbling blocks in the Outcomes Assessment process. In addition to these logistical concerns, some faculty members may be concerned about some of the following broader issues.

Does this process affect my academic freedom?

Nothing inherent in the Montgomery College Outcomes Assessment process interferes or violates the academic freedom of the instructor. Assessing outcomes is simply about faculty determining whether students are learning those things they deem most important, and then using the information to make changes where appropriate. Nothing in the Montgomery College process dictates in any way how faculty choose to deliver the course content or how they grade their students. Requiring faculty, every few semesters, to use a common instrument to assess three core course outcomes is far less proscriptive than asking faculty to use a common text, a common requirement in higher education that is generally accepted by faculty as reasonable.

Will this be more work for us?

To some degree yes, but we are committed to not allowing the Outcomes Assessment process to become burdensome in a way that will interfere with a faculty member's commitment to teaching. The vast majority of time faculty will commit to this process will be confined to intra and inter-disciplinary discussions of what are the most important student outcomes, how these can best be assessed, and what improvements, if any, are suggested by the assessment results. Faculty will not be expected to handle the technical aspects, e.g., data collection and analysis, for this process.

Will assessment information be used to evaluate faculty?

Absolutely not. This process is about assessing the effectiveness of programs, courses, and services, not individuals. In fact, mechanisms and guarantees have been put in place to ensure that the results will *never* be reported in a way that will permit them to be associated with any individual, faculty or student. Please see **Appendix B** for the complete "Protocol for Collection and Use of the Student Learning Outcomes Assessment Data at Montgomery College."

Isn't the primary purpose of Outcomes Assessment to find fault with things?

No, this is not about finding fault with programs, courses, or individuals; it is about agreeing on what is most important in our courses, communicating that to all stakeholders, and finding out what's working and what's not. Great assessment results can and should be used to trumpet success, market programs, motivate faculty and students, and justify increased resources. Less than satisfactory assessment results should lead to improvements in programs, courses, and services.

Will the results have complete statistical validity and will they be useful?

The short answers are no and yes. While the results will not have the kind of statistical validity or reliability that would make a statistics professor happy, they will most certainly be useful in the way this process intends – to give faculty members meaningful information about how their courses are doing at achieving the goals they themselves defined. Achieving greater validity and reliability would require that a carefully selected random sample of papers be scored by a team of trained evaluators, thus minimizing the direct participation in the process by the vast majority of faculty. The Montgomery College assessment process makes a trade-off between complete statistical reliability and faculty involvement.

Isn't this just a slippery slope leading to standardized testing?

Absolutely, and unequivocally, not!! Such a direction has never even been contemplated by anyone, including administrators, involved with Outcomes Assessment at Montgomery College. For further reassurance, know that **the Middle States Association**, strong advocates of Outcomes Assessment, **do not advocate standardized testing**.

Will the results determine whether my course remains in the General Education program?

The short answer is no. Student performance data for specific assessment projects will not affect whether a course remains a General Education course; however, demonstration of the degree to which individual courses support specific competencies as revealed

through participation in the assessment of General Education competencies and areas of proficiency, will be a factor in maintaining General Education recognition

Is this just another academic fad that will be gone in a couple of years?

Not likely. The Outcomes Assessment movement has been a serious one for at least a decade, and its momentum is growing not waning. Every higher education accreditation agency across the country now includes the assessment of learning outcomes as one of their highest priority criterion. The Middle States Association emphasizes and requires the importance of creating a culture of Outcomes Assessment within the institutions it oversees.

Most Important Things to Remember About Outcomes Assessment at Montgomery College

1. Outcomes Assessment improves student learning by systematically evaluating student performance on specific learning outcomes.

2. The Montgomery College Outcomes Assessment process is based on collegewide common core learning outcomes.

3. Outcomes Assessment at Montgomery College is faculty driven and course embedded.

4. It is an on-going, not episodic, process.

5. It is about evaluating the effectiveness of programs, courses, and services, not individuals.

Part Two: A Closer Look at the Outcomes Assessment Process

Part Two of this Handbook:
1. explains the Montgomery College Outcomes Assessment process
2. identifies the requirements and expectations for Outcomes Assessment at Montgomery College
3. gives schedules and timelines for the complete Outcomes Assessment process
4. describes responsibilities in Outcomes Assessment at Montgomery College

Outcomes Assessment at Montgomery College is generally a two year process of assessing course specific and General Education outcomes. Courses participate under the aegis of General Education Outcomes Assessment or course specific Outcomes Assessment. Faculty workgroups develop Outcomes Assessment plans to assess Student Learning Outcomes (SLO). Major stages of Montgomery College's Outcomes Assessment process are **planning**, **piloting**, **full implementation**, and **recommendations**.

The Montgomery College Outcomes Assessment Process

What are the minimum expectations and requirements?

In designing this process, we tried to balance making it as easy as possible with making it valid, reliable, and meaningful. To that end, below are the minimum expectations and requirements for completing an Outcomes Assessment project.

➢ **Assess at least three outcomes** – If your course is participating in General Education Outcomes Assessment, one or two of your outcomes will be based on General Education competencies.

➢ **Obtaining faculty consensus** – For the project to be a success, it is essential that there be faculty consensus about the outcomes and the plan to assess them. The faculty workgroup members and their department chairs will be the leaders in helping foster this consensus. Discipline Lead Deans will be asked to work with their respective faculty to accomplish consensus.

➢ **Common definition of outcomes** – All faculty teaching the course must share the same definition for these three outcomes, regardless of who teaches it or where.

➢ **Common assessment instrument and scoring scheme** – All faculty members must use a common assessment instrument and score it the same way for the purposes of the Outcomes Assessment project. As discussed in Part I, faculty members may grade the assessment instrument however they wish for the purposes of calculating their own course grades.

➢ **Share outcomes with students** – For students to take the process seriously and for the process to be as meaningful as possible, students must be aware of the expected learning outcomes for the course and how their performance on these will be assessed. All this should be communicated early in the course, either as part of a syllabus or through some other printed material. If a rubric will be used to score the assessment, students should receive this as well, and before they participate in the assessment.

➢ **Data collection process** - Faculty participating in the assessment are expected to record and submit student scores electronically on class spreadsheets provided to them by the Collegewide Outcomes Assessment Team (COAT).

➢ **Use the information** – The power of Outcomes Assessment is the importance it gives to "closing the loop." This means using the results of an Outcomes Assessment project to improve whatever it was that was being assessed. Thus, it is vital that the discipline discuss the results and use them to celebrate and build on its strengths and to discuss and remediate its weaknesses.

The Outcomes Assessment Process - the Nitty Gritty

Typical two-year timeframe

In general, an Outcomes Assessment project will take two years to complete, from planning to implementing recommendations. Disciplines participating in General Education Outcomes Assessment and course specific Outcomes Assessment can expect to follow the timeframe below.
o Semester 1 – planning for the Outcomes Assessment project; completing an Outcomes Assessment Plan
o Semester 2 – piloting the Plan in selected sections; revising the Plan as needed
o Semester 3 – full implementation of the Plan in all sections of the course
o Semester 4 - data analysis and report (by COAT), and making observations and implementing recommendations based on results.

Generally, Semester 1 will be a fall semester. Some disciplines may need to move away from the recommended schedule as they get further into the process. If you think this might happen, talk to your Faculty Cadre member to plan a revised schedule.

Definition of key terms

o **Student Learning Outcome (SLO)** – An outcome that describes what a student is expected to learn as a result of participating in academic activities or experiences at the College. SLO focus on knowledge gained, skills and abilities acquired or demonstrated, and attitudes or values changed.

o **Dimensions** – The key aspects of the outcome on which the students will be evaluated. For example, an outcome about effective writing might have mechanics, style, and thesis development as its dimensions. Generally speaking, you should have between 1 and 5 dimensions for each outcome.

o **Assessment method and instrument** – The <u>assessment method</u> is the general assessment approach used to measure whether students have achieved an outcome, such as a test (multiple choice, short answer, and/or essay questions) or an assignment (short reaction paper, research paper, speech, multimedia project, etc.). The <u>assessment instrument</u> is the actual product that is handed out to students, specifically geared to assess whether students have achieved particular outcomes.

o **Rubric** – A printed set of scoring guidelines (criteria) for evaluating work (a performance or a product) and for giving feedback to students. Generally, rubrics specify the criteria for each level of performance on each dimension of the learning outcome.

o **Data breakout variables** – Student demographic or course related variables, such as credits completed, or whether the course was taught by a full-time instructor or adjunct, that might significantly influence the likelihood of a student achieving the outcome. It is often very useful to break-out the assessment data according to one or more of these variables to better understand your Outcomes Assessment results.

Outcomes Assessment Tracks

<u>General Education Outcomes Assessment</u>

The intent of the General Education Outcomes Assessment process is to evaluate the effectiveness of the General Education Program, and General Education courses, in developing the broad-based academic skills and values that exemplify a degree in higher education and are embodied in the General Education Competencies and Areas of Proficiency. Our Outcomes Assessment process is a course based process, so assessment of student performance on General Education competencies takes place within the context of General Education courses.

The primary goals of General Education Outcomes Assessment at Montgomery College are first to improve students' performance in the General Education Competencies at the course level and second, to demonstrate the overall impact of the General Education Program at Montgomery College.

Montgomery College General Education courses contribute to developing a well-rounded student's general knowledge, values, skills and ability to participate in and contribute to our global community. MC has adopted a set of General Education Competencies that align with the Middle States Commission on Higher Education (MSCHE) and the Maryland Higher Education Commission (MHEC) requirements. Although every course offered at Montgomery College has a role in giving students the opportunity to practice and improve in each of the appropriate General Education competencies and Areas of Proficiency, each course in the General Education Program has a greater responsibility in helping students achieve these General Education goals. Please see **Appendix B** for the current list of General Education Competencies and Areas of Proficiency. Please refer to the General Education webpage at http://www.montgomerycollege.edu/curricula/gep.htm for more information about the General Education Program.

Courses that are selected to participate in the Outcomes Assessment process, and are designated as courses in the General Education Program, are required to assess the primary

competencies that faculty have identified as part of the General Education application process. The course faculty develop course based assessments which demonstrate student performance on the selected competencies.

The General Education Committee in conjunction with the Collegewide Outcomes Assessment Team (COAT) has the responsibility for advising faculty on the development of appropriate General Education Assessment instruments.

Results of General Education Assessments are collated and reported to the discipline, the General Education Committee and periodically to MHEC. However, as with all course based assessments, no instructors will be identified through data reporting or other reports. Although assessment results will not affect a course's General Education standing, participating in General Education Assessment is required for all General Education courses that offer 10 or more sections in a fall or spring semester.

Academic Area Outcomes Assessment

Disciplines with at least 10 sections of a course collegewide in a fall or spring semester will be expected to conduct a course-based Student Learning Outcomes project. They participate in the assessment process every five years, according to the Outcomes Assessment Course Participation Schedule.

General Outcomes Assessment

An academic area may choose to initiate an Outcomes Assessment project, independent of General Education or Academic Area Outcomes Assessment schedules. This decision may be the result of faculty interest in obtaining information about a particular course; another reason might be writing a grant proposal that requires Outcomes Assessment. Furthermore, the project does not have to be one that assesses course outcomes. Discipline faculty may want to assess outcomes for other kinds of key academic experiences, e.g. a degree program, certificate, or an internship or service learning program.

Whatever assessment project you choose, you can count on the full support from the COAT. The COAT can provide the expertise, resources, and support for most academic area Outcomes Assessment needs.

Schedule of Course Participation in Collegewide Outcomes Assessment

Five-Year Outcomes Assessment Cycle

Alpha (2012-14) OA Planning Fall 12 OA Pilot Spring 13 Full Imp Fall 13 Recs Spring and Fall 14		Beta (2013--15) OA Planning Fall 13 OA Pilot Spring 14 Full Imp Fall 14 Recs Spring and Fall 15		Gamma (2009-11) OA Planning Fall 09 OA Pilot Spring 10 Full Imp Fall 10 Recs Spring and Fall 11		Delta (2010-12) OA Planning Fall 10 OA Pilot Spring 11 Full Imp Fall 11 Recs Spring and Fall 12		Epsilon (2011-13) OA Planning Fall 11 OA Pilot Spring 12 Full Imp Fall 12 Recs Spring and Fall 13	
Discipline	Courses	Discipline	Courses	Discipline	Courses	Discipline	Courses	Discipline	Courses
BI	101	AR	103	AR	101	AN	101	AC	201
	105		105		107	CH	100/100A		202
	107	BI	203		127	DS	104	CG	120
CJ	110		204	BA	101	EL	101	CH	101
DS	102		205		210		102		102
ED	101	CS	140	CA	106	EN	001	DS	103
EN	190	HS	114		120		002		106
FR	101		201	EL	103	HE	100		107
HS	202	MA	110		104		101	EC	201
MA	090		160	ES	100		107		202
	091	MU	110	RD	101	MA	101	EL	110
	181	PE	186		102		116	EN	101
	182	PS	101		103	RD	095		102
MU	136						099		109
PY	102							MA	103
	203								105
	221							PL	201
SN	101							SP	102
									108
	18		**13**		**13**		**14**		**19**

Who's responsible for what?

A successful Student Learning Outcomes Assessment project requires the participation of many people throughout the College. While discipline faculty are the heart and soul of the process, others, including the Outcomes Assessment Coordinator(s), Faculty Cadre, the Data Resource Team, administrators, and students, all have important roles to play.

The **Discipline Faculty Workgroup** consists of at least one full-time faculty member from each campus at which the course being assessed is offered. This workgroup has the primary

responsibility for the planning, piloting, and full-scale implementation of an Outcomes Assessment project for the discipline. Because this project will involve and impact all faculty in the discipline, a critical expectation of the workgroup is that they will communicate with and solicit feedback from their colleagues during all phases of the project.

Members of the **Discipline Faculty** participate regularly throughout the process by providing feedback and guidance to the Discipline Faculty Workgroup as they plan and implement the Outcomes Assessment project. Furthermore, during the full-implementation phase of the project, all discipline faculty teaching the assessed course are expected to participate in the assessment. Additionally, discipline faculty are expected to engage in a discussion of the assessment results, and how they may be used to improve student learning.

Students are expected to be aware of the common core Student Learning Outcomes for their courses, including the relevant General Education competencies. Students should also understand and be familiar with how they will be evaluated on these outcomes and competencies, including any rubrics used to score the assessments.

Administrators from the campus deans to the Vice President and Provosts, help convey the importance of Outcomes Assessment to the College community. They hold faculty accountable for implementing Outcomes Assessment as required. In addition, they provide guidance and support for the process, and for any recommendations to improve student learning that may result from the assessments.

The **Collegewide Outcomes Assessment Team (COAT)** is responsible for overseeing and supporting Outcomes Assessment efforts at Montgomery College. The team is made up of a Coordinator(s), Faculty Cadre, the Data Resource Team, staff, and a lead administrator. The Team works with College administration and faculty to facilitate and promote Outcomes Assessment.

The COAT is led by the Collegewide Outcomes Assessment Coordinator(s) who serve as the primary spokespersons for Outcomes Assessment. The Coordinator(s) provide direct oversight and coordination of Outcomes Assessment.

The **OA Faculty Cadre** is a small, select group of full-time faculty members representing a wide range of disciplines, as well as every campus. Cadre members are assigned to work one-on-one with a small number of academic disciplines, providing expertise and guidance as needed. They act as mentors to faculty workgroups and their respective disciplines during the timeframe when they are implementing an Outcomes Assessment project.

Outcomes Assessment Forms and Submissions

Below is a list of the forms or submissions each Discipline Faculty Workgroup will complete for the discipline, COAT, and lead dean over the course of the Outcomes Assessment (OA) process.

Semester	Turn In	Completed By	Submitted To	Deadline
Semester 1 (Fall)	Draft Outcomes Assessment (OA) Plan	Workgroup w/Discipline Input	Faculty Cadre and COAT *	Nov. 20
Semester 2 (Spring)	Final Draft OA Plan	Workgroup with Lead Dean sign off	COAT	Feb. 15
	Pilot participating instructor info (Name, CRNs, MC email address) and confirm data spreadsheet format	Workgroup	COAT Coordinators	March 1
	Return completed data spreadsheets	Participating faculty	COAT	End of semester
Semester 3 (Fall)	Revise OA Plan, if necessary, including final version of assessment instrument, scoring tool and data collection page	Workgroup with pilot group input	COAT	Prof. Week
	Instructor information for full implementation (Name, CRNs, MC email address) and confirm full implementation spreadsheet	Workgroup	COAT Coordinators	Oct. 1
	Complete pilot and submit data	All participating faculty	COAT	End of semester
Semester 4 (Spring) and beginning of following Fall	Request additional data based on initial data report	Workgroup	COAT Coordinators	Feb 1
	Observations Worksheet	Workgroup	Faculty CADRE for review	May 1
	Discipline Summary Recommendations Form (Action Plan)	Workgroup with discipline and Lead Dean sign off	COAT, Lead Dean	June 1

* All submissions to Collegewide Outcomes Assessment Team (COAT) should be electronic using the email address outcomes@montgomerycollege.edu .

Each of the forms referenced in the Forms and Submissions Table come with specific instructions explaining how it is to be completed. **The dates listed here are approximate** and will be finalized each semester by the COAT. Sample forms are included in **Appendix A**.

Implementing the Assessment Plan

Piloting the Assessment - Who should I include and how should I use the results?

Every Outcomes Assessment Plan includes one semester for pilot testing the assessment plan before administering it full scale with all faculty. The purpose of a pilot is to make sure your Outcomes Assessment Plan works as intended. Think about factors that may potentially cause problems when administering the assessment on a full-scale basis, and use the pilot to provide you with information that will help you minimize those problems. For the pilot to be effective in this way you must obtain feedback afterwards from instructors and students on questions such as:

- Was the timing of the assessment appropriate?

- Were the assessment questions and instructions clear to students?

- Were the scoring instructions clear to faculty who participated in the pilot?

- Did participating faculty understand how to enter the data and do so in a consistent manner?

- Were your methods of communication with participating faculty members timely and effective?

It is important to actively survey participants in the pilot on these issues. Do not simply rely on individuals to volunteer this information.

Because it's just to work out the kinks, you don't need to include every section of the course in a pilot. When choosing sections to participate, we suggest the following guidelines:

1) Have both full-time and adjunct faculty from each campus where the course is taught involved in the pilot.

2) If possible, use instructors who will also teach the course during the full-scale implementation.

3) Try to include faculty other than just those on the workgroup in order gain feedback from colleagues who were not as intimately involved in developing the Outcomes Assessment Plan.

What do I need to do to plan for the full-scale implementation?

Unquestionably, the key to a successful full-scale implementation of an Outcomes Assessment Plan is clear and timely communication with all participating faculty, including adjuncts, who

will be teaching the course. These individuals need to be made fully aware of all aspects of the assessment plan *prior to the start of the semester* so that they can plan their course without any mid-semester surprises. In particular, participating faculty must be familiar with the following no later than the beginning of professional week:

- the purpose in assessing learning outcomes
- the learning outcomes that are being assessed
- the common assessment instrument to be administered
- when the assessment is to be administered during the semester
- what students should be told about the assessment and its purpose
- the common rubric or answer key to be used in scoring the assessment
- how to enter scores into the scoring spreadsheet that will be provided
- the fact that assessment results will never be reported in a way that could reflect on the performance of an individual faculty member or student

Some departments have prepared and distributed a memorandum to all faculty who will be participating in the assessment that provides information on the items listed above. An example of such a memorandum is included in **Appendix D**.

Observations and Recommendations - Closing The Loop

How do we "close the loop" to the Outcomes Assessment process?

During the semester following the full-scale assessment, data will be analyzed by the Outcomes Assessment Data Resource Team and a report will be generated that will go to the discipline and the Lead Dean for that discipline. Once that report is received it becomes the responsibility of the discipline to review and discuss it, and to make observations and recommendations about each of the following aspects of the Outcomes Assessment experience:

- the learning outcomes that were assessed
- the assessment instrument
- the assessment rubric, if one was used
- the assessment process
- the assessment results

Observations should identify those things that worked well and those things that did not, and in the case of the latter, recommendations should be provided to help address those issues in the future.   This is particularly important with regard to the assessment results, since the overriding purpose of Outcomes Assessment is to document student learning and, where necessary, to suggest and implement changes that might improve it.

There are two parts to the final phase of the assessment process (not counting the implementation of recommendations). The first part is an **observation** process where you either as a discipline or on a campus by campus basis make observations of strengths and concerns based on your

assessment process and data. The second part is to make a series of discipline **recommendations** based on the observations made by the discipline.

The Outcomes Assessment Observations Worksheet should be submitted to the Faculty Cadre member by May 1. Each campus can submit their own Observations Worksheet to reflect campus discussions of the process, materials and data, or if it is more feasible, one Observations Worksheet can be submitted by the entire discipline. The goal of the observations process it to give the discipline faculty the opportunity to review and talk about all aspects of the assessment process and the data with an eye to understanding what is going well with regard to the course and what might need improvement.

The Discipline SLO Summary Recommendations and Action Plan Form is due by June 1. The form, with the approval of the lead dean, must be submitted by the discipline to the outcomes@montgomerycollege.edu mailbox. Recommendations should generally take two forms:

1. **Identification of specific activities or practices that are working and can be replicated (i.e. communicating and replicating best practices) or**
2. **Identification of areas of concern and specific activities or practices that can be used to improve student learning experiences (i.e. improving student learning).**

Instructions for these forms, along with a completed sample, are provided in **Appendix A.**

**Things to Remember about Montgomery College's
Outcomes Assessment Process**

1. Generally, the process is course based and the assessment is course embedded.

2. Almost every discipline is expected to participate either under the aegis of General Education or Academic Area Outcomes Assessment.

3. From start to finish, the process generally requires 2 years to complete.

4. Disciplines are expected to assess 3 common core learning outcomes as part of a mandated assessment project.

5. All discipline faculty must agree on the definitions of the core learning outcomes.

6. During the semester of full-scale assessment, all instructors must use a common assessment instrument and score these using a common rubric.

7. Faculty must use the results of Outcomes Assessment to improve courses and programs where needed.
8. All assessment instruments will be piloted with feedback used to revise the plan and materials.

9. Observations and Recommendations are both campus based and collegewide.

10. Faculty complete and submit the Recommendations Form, with lead dean approval, to outcomes@montgomerycollege.edu by June 1.

Part Three: Guidance for Developing an OA Plan

Part Three of this Handbook:
1. gives advice for developing Student Learning Outcomes (SLO)
2. explains selecting an assessment method
3. gives advice for developing an assessment instrument
4. gives suggestions for developing a scoring tool

This portion of the Outcomes Assessment Handbook is a "how-to" manual of sorts, taking you through the steps of creating an Outcomes Assessment Plan. Each section is designed to give you some basic guidelines for each aspect of an Outcomes Assessment Plan. Although the suggestions below represent best practices in Outcomes Assessment, as well as the experiences of faculty workgroups from previous years, we know that some disciplines have specific needs which may conflict with these recommendations, so use the Handbook as only a beginning point.

Faculty consensus

In the sections that follow, we provide tips and guidance to help you get the most out of your assessment effort. But no matter how you go about the process it *is absolutely crucial that you take the time to get consensus and buy-in from your colleagues at each stage of the process*. Remember, all faculty members teaching the course will be required to participate in the full-scale assessment in year 2, so getting them on board now will make the process easier later. The Outcomes Assessment process is only as meaningful as faculty and administrators choose to make it – if you can encourage your colleagues to contribute to the creation of good outcomes now, they may be more responsive to assessing those outcomes later.

Student Learning Outcomes

Students who know what is expected of them in terms of their learning have a framework for learning and are more successful. Faculty who have a clear idea of what they want their students to learn are able to align their instructional activities to these outcomes. In these two ways, clearly articulated outcomes are essential to student learning. Outcomes Assessment allows us to systematically examine the alignment between student learning, instructional or institutional expectations, and instructional activities. To this end, we begin planning for Outcomes Assessment with Student Learning Outcomes.

Where do we start?

Every course should have a set of collegewide common core expectations for student learning. These expectations are the most important things a student who passes the course should take away from any section of the course. While individual instructors may add to this course, there

should be a shared understanding of the core skills and knowledge upon which the course is based. It is these expectations which should be reflected on each course syllabus and which should be used to determine Student Learning Outcomes for the Outcomes Assessment process.

Note: If the discipline does not have a set of articulated Student Learning Outcomes for the course, the development of collegewide common core Student Learning Outcomes may be one of the first outcomes of this process. The outcomes should become a standard part of the syllabus.

What makes a good learning outcome?

Generally speaking, good learning outcomes are:

- learner centered
- key to the course's mission
- meaningful for faculty and students
- representative of a range of thinking skills
- measurable

First, and most importantly, good learning outcomes focus on **what students can do** instead of the effort we put into teaching them. Second, collegewide outcomes must be **essential to the course's mission**, something that everyone teaching the course agrees is important. Avoid outcomes that are idiosyncratic or tied to a particular instructor's approach to a course. Third, design outcomes that are **meaningful for faculty and students**. If you cannot explain *why* a certain outcome is important, it probably isn't very meaningful. Finally, outcomes often reflect a **range of thinking skills,** from low level identification to higher level application of knowledge or skills.

Good outcomes **are measurable** in some way; they communicate what student learning will be evaluated in the course. Often courses will have two levels of outcomes; some broader based outcomes which reflect higher order thinking skills and broad topics, and some more narrow, lower level thinking skills outcomes which are essential to reaching the broader outcomes.

The Student Learning Outcomes should be included as a standard part of the course syllabus.

Student Learning Outcomes should:

- be written in terms of what the student will be able to do at the end of the course
- use active verbs
- reflect measurable standards or reflect the basic knowledge and skills that the student will be held accountable for
- reflect a combination of higher order thinking skills and supporting or enabling skills

Discipline	Example SLO
AR	Students will be able to distinguish form and content in 2-dimensional and 3-dimensional works of art.
BI	Students will be able to explain the key elements in the theory of organic evolution, cite major evidence that supports Darwin's theory of natural selection, and explain the role of natural selection in the development of chemical resistance in microbes, viruses, plants and animals.
HE	Students will be able to analyze a nutrition food label and explain various components of that food label and their relation to healthy food choices.
EN	Students will be able to apply principles of logical argument and persuasion in their writing.
MA	Students will be able to demonstrate an understanding of the Central Limit Theorem and sampling distributions and use these to estimate a population parameter.

When defining Student Learning Outcomes to assess, it is tempting to take the easy route and think only in terms of learning outcomes that represent lower order skills because they will be simpler to evaluate. Instead concentrate on the skills and knowledge which are essential for a student to be considered competent at the end of the semester. While some lower order types of learning outcomes may be essential to reaching higher level outcomes, make sure that you define a range of outcomes which reflect higher order, complex application tasks in addition to any essential supporting learning outcomes which may reflect lower order thinking skills.

Lower Order vs. Higher Order Thinking Skills

While basic recall of facts is important to any course, your assessment results will be more meaningful if you have chosen a more complex skill. Moreover, it will likely reflect what is truly important in your course. Often facts are important because we want students to be able to do something with that information.

Student Learning Outcomes (SLO), which reflect higher order thinking skills, use action verbs that are observable and measurable, as well as ones that reflect higher order skills. Examples of such verbs are solve, design, write, compare, apply, decide, draw, persuade, investigate, and evaluate.

Refer to the following possible outcomes for an information technology course:

- Students will be able to correctly summarize the key differences between open and closed source software development models.

- Students will be able to evaluate the strengths and weaknesses of open and closed source software development models.

While the first outcome is certainly easier to achieve, the second one better represents what students would have to do with the information in the real world. You will get more useful information about student learning with the second SLO.

How do we choose which Student Learning Outcomes to assess?

To select Student Learning Outcomes to assess for this process, consider the following questions:

1. What are the 3 or 4 most crucial outcomes for the course?
2. Are there topic areas where students struggle on a regular basis?
3. Do you have questions about a particular area of student achievement?
4. Are there outcomes which reflect skills or knowledge students will need in future courses or careers?
5. Are there outcomes which reflect General Education competencies?

Identifying outcomes which reflect any of these characteristics would be a place to start. Ultimately the outcomes you select:

- should reflect higher order thinking skills (**application of knowledge or skills**);
- be agreed upon as essential and core to the course (addressed in **every section** of the course); and
- **be meaningful** to the discipline.

How do we include a General Education competency in our Student Learning Outcomes?

For courses which are part of the General Education Outcomes Assessment process, one or two of your outcomes must reflect the assigned General Education competency. Your first step will be taking the General Education competency and choosing an outcome that is aligned to it, but is also more specific to how students are expected to use that skill in your course.

There are many possible outcomes for each competency; you will select just one for each General Education competency you are scheduled to assess. The General Education competencies are extremely broad, expressing very general skills students are expected to have after taking General Education courses. The outcome you use will be specific to the course.

> Each of the following EN 102 Student Learning Outcomes reflects the General Education Critical Thinking competency:
>
> - Students will be able to critically evaluate a selected argument using the formal elements of argument.
> - Students will be able to find and identify any flaws in logic and reasoning that weaken a given argument text.
> - Students will be able to analyze and evaluate an author's use of rhetorical techniques and their effects on readers.

To see how different courses interpret the same competency, consider the three different outcomes that were written by the faculty workgroups in English, health, and speech for the assessment of the Information Literacy competency.

> **Information Literacy competency:** Identifying, locating, and making effective use of information from various electronic and print sources.
>
> - <u>EN 102</u>: Students will integrate information from different types of secondary sources to support a thesis on a research topic.
> - <u>HE 100</u>: Students will analyze, in writing, information from various information sources to assess personal risk factors and examine health issues.
> - <u>SP 108</u>: Students will find, identify, and apply research materials to their speech presentations.

As you can see, each group designed an outcome that reflects what that competency means in their particular course.

> **Note**: Courses that are not part of the General Education Outcomes Assessment process, but are recognized as General Education, or naturally support any of the General Education competencies, are encouraged to assess Student Learning Outcomes that reflect General Education competencies as part of the Academic Area Outcomes Assessment.

> ### Five Key Things to Remember About Collegewide Common Core Student Learning Outcomes for a Course
>
> 1. Select outcomes to assess because they're meaningful, not because they're easy to measure.
> 2. Make sure your outcomes are expressed in terms of how students are impacted by your course.
> 3. Make sure that your common core outcomes reflect a faculty consensus in your discipline and not just the views of a few individuals.
> 4. Where possible, have your outcomes reflect higher order thinking skills.
> 5. Make sure that all faculty and students involved with the course are familiar with the outcomes.

Supporting Student Activities

To get the most meaningful results, students should be given opportunities to practice achieving an outcome before it is assessed. If faculty believe that a stated outcome is important, then logically they should have supporting activities in their course that help students achieve the outcome. For example, if the science faculty believes that writing effectively is an important skill in their courses, it should include writing assignments.

You should complete the Supporting Student Activities Worksheet (Part II of the OA Plan) before developing a formal assessment of the outcome. As the American Association for Higher Education points out in number four of its "Nine Principles of Good Practice for Assessing Student Learning,"

> Assessment requires attention to outcomes but also and equally to the experiences that lead to those outcomes. … Assessment can help us understand which students learn best under what conditions; with such knowledge comes the capacity to improve the whole of their learning.

These supporting activities allow students opportunities to practice the outcome and receive feedback on their performance. Supporting activities will likely vary from instructor to instructor, and that's as it should be. What is essential is that every instructor is able to point to academic experiences that adequately prepare his or her students to successfully achieve the desired outcome.

How do we align Student Learning Outcomes and supporting student activities?

For this part of the Plan, you should collect activities which faculty teaching the course believe help students achieve the Student Learning Outcome. If this list is limited, you should have a discipline discussion to brainstorm ways in which the Student Learning Outcome could be supported instructionally.

The following are examples of activities that might be used to support an Information Literacy outcome:

"Students will critically evaluate websites for possible use in an academic research paper."

- Students take Montgomery College library's tutorial "Evaluating Information on the World Wide Web" and submit their quiz results to the instructor.

- In a computer classroom the instructor demonstrates the process of finding websites for a given research topic, then has students work in pairs to find one credible site. After independent work time, instructor pulls up selected sites from the student pairs, asking them to justify their choices. Instructor provides feedback on the chosen sites.

- Instructor opens a discussion with the class about their previous experiences using the Internet for research, guiding the class to general principles about what makes a good site for academic research.

This is not an exhaustive list; it is merely a list of possible instructional activities faculty might realistically use as part of regular instruction to facilitate student achievement of the Student Learning Outcome.

Assessment Methods and Instruments

The next part of the Outcomes Assessment Plan is choosing an assessment method and writing an assessment instrument. The assessment method is the general type of tool you will use to assess the Student Learning Outcome. The instrument is the actual assignment, quiz, exam, or project you will use to complete the assessment. First, you should determine what method you want to use, and then, you will develop the actual tool.

How do we choose an assessment method and develop an assessment instrument?

Common assessment methods include test questions (multiple choice, short answer, essay), formal writing assignments (essays, research papers, reaction/review papers), performances, and portfolios. You will need to consider a variety of factors as you choose your method, including alignment with the outcome, ability to get faculty consensus, and ease of scoring. It is difficult to separate the method from the instrument; however, it is useful to step back at this point and consider the method separately from the actual assignment. Considering the general approach to the assessment will allow you to determine the most useful method and develop a useful assessment instrument.

Alignment

Probably the most important consideration when choosing or developing an assessment method is whether it is aligned with the Student Learning Outcome. In other words, is what you're asking the students to do in your assessment going to provide you with solid evidence about whether or not they have achieved the desired outcome? If your outcome deals with a student's ability to make a persuasive speech, a research paper is not a good instrument to measure this outcome. If you are assessing a quantitative reasoning outcome which speaks to students' ability to interpret some particular statistical information, simply asking them to calculate something correctly will not tell you whether they've achieved that outcome.

Aligning outcomes with methods may seem like an obvious recommendation, but it's not uncommon to see a disconnect between the outcome and the assessment instrument when workgroups are in the early stages of writing their Outcomes Assessment Plans. In some instances, workgroups end up revising their outcomes after working on their assessment instrument. That's okay, as long as everything aligns before you pilot.

<u>Ease of scoring</u>

We all know that writing good multiple choice questions takes a lot of time, but scoring them is fast. Writing a good essay question is less time-consuming than grading a stack of student essays. With everything we do, we need to consider how much time it will take; you should consider the time involved in scoring the instrument and reporting the data. When choosing an assessment method you must weigh time against meaningful results. It may be challenging to find the balance, but the efforts of going through an Outcomes Assessment Plan won't be worth much if you cannot use the results to make decisions about the strengths and weaknesses of your course. The next main section will discuss scoring in greater depth.

"Pros and Cons of Common Assessment Instruments" in the **Appendix D** goes into much greater detail about the main types of assessment instruments and the benefits and drawbacks of each. It also provides tips and advice for how to use each one in a multi-campus, multi-section Outcomes Assessment process.

<u>Assess two (or more) Student Learning Outcomes with one method</u>

One way to balance meaningful results with time spent scoring is to use one assessment instrument to measure more than one outcome. This technique has been used successfully by many of the workgroups participating in the General Education Outcomes Assessment process. This approach works especially well if you have both skill- and knowledge-based outcomes to assess.

For example, the workgroup for an environmental biology course tasked with assessing the General Education Competency, "Writing Effectively," and the following two course-specific **outcomes:**

- students will be able to critically analyze articles on environmental issues, and

- students will be able to describe major ecological principles and relate these principles to the evaluation of current environmental problems

might choose as an **assessment instrument** a writing assignment that combines the first two outcomes. Perhaps they would design a paper assignment that asks students to analyze a given article about an environmental problem, applying major ecological principles to the problem. The paper would then be scored on three levels: how well the paper was written, how well the student analyzed the given article, and how well the student was able to relate ecological principles to the environmental problem addressed in the article. In many ways, this approach is more authentic to student learning because it asks students to integrate knowledge and skills.

Assessing each outcome alone certainly works, but combining them gives us a better picture of how students perform in a more "real world" setting. When scoring an assessment which assesses two or more outcomes, you will assign separate scores for each outcome as well as having an overall score.

Writing the Assessment Instrument

Once you've chosen your assessment method (exam, paper, etc.) it's time to write the actual instrument that will be handed out to students. We all have experience with writing assessment instruments; it's one of the major tasks we have as teachers. Creating an instrument for use in multiple sections does require an extra level of scrutiny. Again, you need to make absolutely certain that the assessment instrument you use measures how well the students meet the expected outcomes, rather than something else. Additionally, make sure the instructions to the student clearly explain the expectations for the assignment.

Here are the three easiest ways to ensure a quality instrument for Outcomes Assessment:

- Make sure the assignment or exam questions are directly aligned with the outcomes.
- Write directions that are clear to people who have never seen the instrument before and that clearly articulate the expectations for completing the assignment.
- Pilot the instrument and ask for feedback from the students and faculty who used the instrument.

For tips about writing good assessment instruments, please see "Strategies for Developing Assessment Instruments" in Appendix E. Another approach is to give your instrument to a few colleagues in different departments. They will have fresh eyes and can look at your instrument without the tunnel vision that sometimes comes when you know your content so well.

Key Things to Remember about Developing an Assessment Method and Instrument

1. Consider the method separately from the actual instrument to find the best approach.
2. Think about the ease of scoring and alignment with the learning outcomes to help determine the best assessment approach.
3. Consider assessing two or more outcomes with one assessment method/instrument.
4. Make sure the instructions for the assessment instrument clearly lay out the expectations for the student and faculty who will use the assessment instrument.

Scoring Tools

"Consistency, consistency, consistency" is the mantra when multiple individuals are being asked to score a common assessment, as is the case in the College's Student Learning Outcomes Assessment process. If the assessment instrument consists of a set of objective questions each with only one right or wrong response, e.g multiple choice, then a simple answer key distributed to all faculty who will be administering the exam will do the trick. If, on the other hand, the instrument involves open-ended types of questions or assignments, such as essays, research papers or student performances, which by nature require some subjectivity in their scoring, there are some things you can do to structure a scoring scheme that will maximize consistency among faculty administering the assessment.

How do we score the assessment?

Identify the dimensions of the outcome
The first step in setting up scoring procedures for non-objective assessments is to identify the dimensions for each outcome; i.e., the key broad aspects or areas of student performance on which the assessment will be scored. Here are two examples from previous cycles of the General Education Outcomes Assessment process that show how outcomes' dimensions can be defined. In these examples, the General Education competency is bolded, and the dimensions used by the workgroups follow.

- **Analyzing and interpreting data**:
    - identify and use data
    - analyze and interpret data
    - draw conclusions based on analysis and interpretation of data

- **Communicating effectively in written language:**
    - mechanics
    - development
    - style

Short answer assessments

In the case of assessments made up of open-ended short answer questions, it is critical that a clear answer key of acceptable right answers for each question be developed. During the full implementation of the assessment, every instructor must then score their students based on this common answer key, though they are free to grade additional answers as correct in determining their own course grades.

28

For scoring consistency with longer open-ended assignments such as essays, research papers, or performances, a rubric should be developed. A rubric is a criterion based scoring tool that specifies levels of achievement (e.g. exemplary, satisfactory, unsatisfactory) for each dimension of the outcome. As part of the rubric, criteria are provided that describe what constitutes the different levels of achievement   For example, the rubric that is being used to score effective writing with dimensions of mechanics, style, and development would provide the criteria that describe what constitutes exemplary, satisfactory, and unsatisfactory student work in the areas of for writing mechanics, for writing style, and for writing development.

Although only three levels of achievement are specified in the above example, rubrics can have any number of levels that is manageable and makes sense for the given assessment instrument. However, from three and five levels generally make the most sense.

More about rubrics

There are two major types of rubrics: holistic and dimensional. Dimensional is also known as a primary trait rubric. Both detail the particular qualities that separate excellent from poor student work along a spectrum, but the first groups the dimensions together, while the second keeps them separate.

The holistic rubric looks at the instrument as a whole; students receive one overall score based on a pre-determined scheme used by everyone. The dimensional rubric yields sub-scores for each dimension, as well as a cumulative score which is the sum, either weighted or un-weighted, of the dimensional scores.

Each type of rubric has its strengths and weaknesses. Holistic rubrics allow you to look at a student's overall performance, and often it corresponds better to the grade that pops into our heads immediately after we finish looking at the student work. The dimensional rubric provides more information about what's working and what's not. For example, perhaps students are doing a good job with learning the mechanics of writing, but not so well with learning writing development. A dimensional rubric will provide information with this level of detail, whereas a holistic rubric will not.   Examples of each are provided in **Appendix D.**

Regardless of the type of rubric, it is important that it be shared with students well before the assessment is administered. It is unreasonable to expect students to perform well on an assessment if they don't have a clear understanding of the standards being used to evaluate it.

Even if you are using a set of objective questions you may find it helpful to group subsets of these questions together that reflect an assessment of a specific dimension of your outcome. Doing so might be particularly useful in situations where the assessment includes a large number of objective questions. Without grouping the questions to reflect key dimensions of the outcome being assessed, faculty participating in the assessment will have to enter a score for each

question in the assessment on a scoring spreadsheet, potentially creating a significant data entry burden. By grouping, say 5 questions within a dimension, faculty could enter one number for the dimension, i.e., the number correct out of the 5 questions, instead of entering a separate student score for each of the 5 questions.   There is, of course, a tradeoff in doing this, as the discipline will get back less information from the data analysis, and so this is a consideration that needs to be carefully thought out.

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5 Key Things to Remember about Scoring Tools

1. It is imperative that the discipline talk about the assessment instrument and determine what kind of student performance qualifies as successful.

2. When using objective measures (e.g. multiple choice tests), consider grouping questions which reflect a specific aspect of the outcome.

3. When using rubrics, be sure that students see the rubric which will be used to evaluate the assignment before they complete it.

4. When using rubrics, norming is really important.

5. Be sure to get feedback after the pilot on how well the scoring tool worked with the assignment and whether faculty feel that it reflects successful performance effectively.

Appendix A

Sample Forms and Instructions

Blank forms are available from
http://www.montgomerycollege.edu/outcomes/

OA Plan Summary (to be completed last)

Please complete the following form with a summary and overview of your outcomes, assessment instrument, and scoring information.

Course: EN 102 - **Sample**   Planning Semester: **Sample**
Workgroup Members: **Sample**

SLO #1:	Students will be able to integrate information from different types of secondary sources to support a thesis on a research topic.
Check the appropriate box: X Gen Ed Competency - Competency Area: <u>Information Literacy</u> ☐ Course Specific Outcome	
Assessment Instrument:	Students will write an 8-10 essay using sources to support their thesis/claim.
Scoring:	The student's response will be assessed using a rubric measuring effective use of Works Cite or Bibliography, Identifying Sources, and Use and Documentation of sources. Each dimension is assessed on a scale of excellent (3), satisfactory (2) or unsatisfactory (1).

SLO #2	Students apply principles of logical argument and persuasion in their writing.
Check the appropriate box: ☐ Gen Ed Competency -Competency Area: _____ **X** Course Specific Outcome	
Assessment Instrument:	Students will write an 8-10 essay using sources to support their thesis/claim.
Scoring:	The student's response will be assessed using a rubric measuring use of sources, audience, and logic. Each dimension is assessed on a scale of excellent (3), satisfactory (2) or unsatisfactory (1).

SLO #3:	The student will be able to write multiple-page essays that meet college-level academic standards for content, organization, style, grammar, mechanics, and format.
Check the appropriate box: X Gen Ed Competency -Competency Area: <u>Effective Communication</u> ☐ Course Specific Outcome	
Assessment Instrument:	Students will write an 8-10 essay using sources to support their thesis/claim.
Scoring:	The student's response will be assessed using a rubric measuring mechanics and style, organization and development. Each dimension is assessed on a scale of excellent (3), satisfactory (2) or unsatisfactory (1).

Part I- Choosing What to Assess

Instructions: *Choose at least 3 Student Learning Outcomes (SLO) to assess and give a reason for choosing each SLO. Selected SLO can be from the primary collegewide SLO for the course or can be supporting outcomes if there is specific reason for assessing the supporting outcomes and the discipline agrees they are important to assess.*

*<u>Note</u>: General Education courses must select at least <u>**one**</u> SLO that aligns with one of the primary competencies for the course. For those SLO please identify the competency to be assessed in your reason for selecting this SLO.*

(Please delete the instructions for completing this section.)

Student Learning Outcome #1: Students will be able to integrate information from different types of secondary sources to support a thesis on a research topic.

Reason selecting this Student Learning Outcome:
This is an essential outcome of this course. Effective integration of relevant, appropriate sources material and appropriate documentation is of a key thing that many students seem to struggle with. Having specific data that illuminates whether or not students are performing satisfactorily will be helpful to us. We can use this data to know whether we need to add additional support for this key skill or not.

Student Learning Outcome #2: Students apply principles of logical argument and persuasion in their writing.

Reason selecting this Student Learning Outcome:
Argument and persuasion are core elements of academic writing and a key element of this course. This is a subject that is introduced at the previous level, and it is one that students seem to do well with if they are successful writers; however, these skills are seldom looked at separately from a complete essay. Looking at this outcome separately from the other aspects of writing will give us an opportunity to look specifically at this outcome.

Student Learning Outcome #3: The student will be able to write multiple-page essays that meet college-level academic standards for content, organization, style, grammar, mechanics, and format.

Reason selecting this Student Learning Outcome:
This is a second level composition course, and this is the main focus of the course. Breaking it apart specifically and looking at it across all sections will give us a good sense of whether our course, as a whole, is meeting this crucial task.

Part II: Planning your Assessment

Supporting Student Activities

One of the key benefits of Outcomes Assessment is that it facilitates the alignment between student performance and instruction by providing data about student performance on discrete outcomes in the course. On this worksheet, you will look at the types of activities which might be used to give students opportunities to practice with and reach the stated outcomes.

Instructions*: List each SLO being assessed. Then make a list of instructional activities which might be used to facilitate student achievement of the outcome.   If activities support multiple outcomes, they can be listed for each appropriate outcome. Please survey instructors who teach the course to get a comprehensive list of potential instructional activities.*

Student Learning Outcome #1: Students will be able to integrate information from different types of secondary sources to support a thesis on a research topic.
Supporting Student Activities:
(in class) practice distinguishing between source material and students' commentary on the reference material   - Students will read articles and incorporate quotes, paraphrases, and summaries from these articles into an original paragraph   - Students will write short essays that identify and analyze argument in various forms   - Students will produce works cited or bibliographic information in appropriate formal citation format
Student Learning Outcome #2: Students apply principles of logical argument and persuasion in their writing.
Supporting Student Activities:
- Students form and articulate an opinion about a research topic based on principles of inquiry   - Students identify an appropriate, specific audience   - Students research and write about a variety of perspectives on a single topic.   - Students adapt tone and style to address audience in a variety of writing assignments   - Students employ clear pattern(s) of argument (deduction, induction, toulmin logic, etc) in writing assignments   - Students identify fallacies in source material and avoid using them in their own writing.
Student Learning Outcome #3: The student will be able to write multiple-page essays that meet college-level academic standards for content, organization, style, grammar, mechanics, and format.
Supporting Student Activities:
- Students analyze and evaluate other texts.   - Students complete planning activities (outlines, etc.)   - Students write about a variety of perspectives on a single topic.   - Students adapt tone and style to address audience in a variety of writing assignments.   - Students review grammar and essay format in readings.   - Students have discussions about various topics.

Part III A: The Assessment Tool

Student Learning Outcome #1: Students will be able to integrate information from different types of secondary sources to support a thesis on a research topic.

Student Learning Outcome #2: Students apply principles of logical argument and persuasion in their writing.

Student Learning Outcome #3: The student will be able to write multiple-page essays that meet college-level academic standards for content, organization, style, grammar, mechanics, and format.

All three learning outcomes will be assessed in an assigned 8-10 page research paper assigned in each course. Instructors have the freedom to assign different, course appropriate topics or to guide students in choosing their own topics, but the end result will be an 8-10 page paper requiring research, use of sources and appropriate documentation.

Part III B: Scoring the Assessment

Student Learning Outcome #1: Student will be able demonstrate mastery of the past tense in oral production.

	Student Name				Score
	Criteria	*Excellent*	*Satisfactory*	*Unsatisfactory*	
Info Literacy/Documentation (SLO #1)	Effective Use of Works Cited or Bibliography	Has complete, accurately formatted works cited or bibliography page	Works cited or bibliography page is complete but has some format or content errors.	Works cited or bibliography page is incomplete: May be missing entries or information or has many format errors.	
	Identifying Sources	Correctly selects from popular and academic sources, considering currency and accuracy.	Usually, but not always, correctly chooses current or accurate popular and academic sources.	Chooses inappropriate or outdated sources for the given assignment	
	Use and documentation of sources	Summarizes or paraphrases source material in own words or quotes verbatim sparingly, using proper in-text citations.	Sometimes summarizes or paraphrases source material in own words but quotes verbatim material too often. Uses in-text citations, but sometimes has inconsistent formatting.	Does not summarize or paraphrase source material accurately; uses verbatim quotes extensively with inaccurate or no in-text citations.	
Argument (SLO #2)	Use of sources	Thorough analysis of reputable sources to support argument/thesis.	Reputable sources are usually analyzed to support argument/thesis	Does not analyze sources to support argument/thesis or sources are not reputable.	
	Audience	Adapts tone, style and details appropriate for a specified audience.	Identifies audience, but uses appropriate tone, style, and details for a specified audience inconsistently or sometimes	Fails to adapt appropriate tone, style, details for a specified audience.	
	Logic	Contains no major logical errors.	Contains few logical errors.	Contains many logical errors.	
Writing Effectively (SLO #3)	Mechanics and style	Correct topic choice, length and format.	Adequate topic choice. Close to correct length. May include some formatting errors (e.g. nonstandard font size or margins).	Inappropriate topic choice. Far exceeds or falls short of required length. Does not follow required format.	
		Few or no sentence structure, grammar, spelling, or punctuation errors.	Few sentence structure, but some grammar, spelling, or punctuation errors, but these don't interfere with the reader's comprehension of the paper.	Sentence structure, grammar, spelling, or punctuation errors significantly hamper comprehension.	
		Appropriate use of diction and word choice	Some diction or word choice is inappropriate or informal.	Diction or word choice is consistently inappropriate or informal.	

	Organization	Thesis (claim) is clearly stated based on focused research question(s).	Thesis is less clearly stated.	Thesis is not clearly stated.	
		Paper is logically organized. Main ideas are clear and supported in well-constructed paragraphs with transitions.	Paper has basically logical organization. Most paragraphs are well constructed; main ideas are evident in most. May have limited use of transitions	Little or no overall organization. Paragraphs may be poorly constructed. Or confusing with few or no transitions.	
		Intro and conclusion are comprehensive and thesis driven	Intro and conclusion satisfactorily address the thesis.	Intro and/or conclusion are missing or don't address the thesis.	
	Development	Paragraphs use relevant evidence, such as examples, paraphrases, or quotes to support thesis.	Each paragraph has some relevant examples, paraphrases or quotes as evidence to support the thesis.	Paragraphs have few, if any examples, paraphrases or quotes as evidence.	
		Substantive and factual information is used throughout.	Essay has relevant content, but may include "fluff" or non-related ideas.	Much of essays content is irrelevant or immaterial.	

Part III C: Data Collection Page

Student Learning Outcome #1:

Column Heading(s)	Min/Max Score	Decimal Allowed?	Satisfactory Score
Effective Use of Works Cited or Bibliography	1=Min, 3=Max	no	2 or more
Identifying Sources	1=Min, 3=Max	no	2 or more
Use and documentation of sources	1=Min, 3=Max	no	2 or more

Student Learning Outcome #2:

Column Heading(s)	Min/Max Score	Decimal Allowed?	Satisfactory Score
Use of sources	1=Min, 3=Max	no	2 or more
Audience	1=Min, 3=Max	no	2 or more
Logic	1=Min, 3=Max	no	2 or more

Student Learning Outcome #3:

Column Heading(s)	Min/Max Score	Decimal Allowed?	Satisfactory Score
Mechanics and style	1=Min, 3=Max	no	2 or more
Organization	1=Min, 3=Max	no	2 or more
Development	1=Min, 3=Max	no	2 or more

OA Plan Summary (to be completed last)

Please complete the following form with a summary and overview of your outcomes, assessment instrument, and scoring information.

Course: MA XXX - **Sample**   Planning Semester: **Sample**
Workgroup Members: **Sample**

SLO #1:	The student will be able to **set up**, **evaluate**, and **interpret** integrals that model applications in physics.
Check the appropriate box: X Gen Ed Competency - Competency Area: <u>Scientific and Quantitative Reasoning</u> ☐ Course Specific Outcome	
Assessment Instrument:	Short answer question given in a test asking students to **interpret** the integral of a physical function.
Scoring:	The question is graded out of 7 points, with specific points allocated to every important component of **interpretation** of the integral.

SLO #2:	The student will be able to solve selected differential equations using **graphical**, **numerical**, and **analytical** methods.
Check the appropriate box: ☐ Gen Ed Competency - Competency Area: _____ **X** Course Specific Outcome	
Assessment Instrument:	Question given in a test asking to solve a selected differential equation by an **analytical** method.
Scoring:	The question is graded out of 15 points, with specific points allocated to every component of the **analytical method**.

SLO #3:	The student will be able to represent function with power series and approximate functions with Taylor polynomials.
Check the appropriate box: ☐ Gen Ed Competency - Competency Area: _____ **X** Course Specific Outcome	
Assessment Instrument:	Question given in a test asking to represent a function by a Taylor polynomial of degree 2 and using this expansion to approximate a specific number.
Scoring:	The question is graded out 11 points with specific points allocated to the expansion of the function in a power series and the use of the power series to approximate a specific number.

Part I- Choosing What to Assess

Instructions: *Choose at least 3 Student Learning Outcomes(SLO's) to assess and give a reason for choosing each SLO. Selected SLO's can be from the primary collegewide SLO's for the course or can be supporting outcomes if there is specific reason for assessing the supporting outcomes and the discipline agrees they are important to assess.*

<u>Note</u>: Gen Ed courses must select at least <u>one</u> SLO that aligns with one of the primary competencies for the course. For those SLO's please identify the competency to be assessed in your reason for selecting this SLO.

(Please delete the instructions for completing this section.)

SLO #1: The student will be able to **<u>set up</u>**, **<u>evaluate</u>**, and **<u>interpret</u>** integrals that model applications in physics.

Reason selecting this SLO: Integration is the central topic for this course and using integration to model applications in physics requires students to use creative problem solving and quantitative reasoning to set up and interpret the integrals.

SLO #2: The student will be able to solve selected differential equations using graphical, numerical, and analytic methods.

Reason selecting this SLO: This course is the prerequisite for MA282, Differential Equations and students should leave the course with a basic understanding of differential equations.

SLO #3: The student will be able to represent function with power series and approximate functions with Taylor polynomials.

Reason selecting this SLO: Power series are important tools of higher mathematics and engineering applications. Taylor series introduce students to the concept of power series that is expanded upon in later courses such as Linear Algebra and physics applications such as Fourier Series.

Part II: Planning your Assessment

Supporting Student Activities

One of the key benefits of outcomes assessment is that it facilitates the alignment between student performance and instruction by providing data about student performance on discrete outcomes in the course. On this worksheet, you will look at the types of activities which might be used to give students opportunities to practice with and reach the stated outcomes.

Instructions: List each SLO being assessed. Then make a list of instructional activities which might be used to facilitate student achievement of the outcome. If activities support multiple outcomes, they can be listed for each appropriate outcome. Please survey instructors who teach the course to get a comprehensive list of potential instructional activities.

Student Learning Outcome #1: The student will be able to **set up**, **evaluate**, and **interpret** integrals that model applications in physics.

Supporting Student Activities:
Class Discussion
Text Readings
Modeling of problem solving in class
Practice problem solving in groups
Practice problem solving at home
Demonstration of application of integrals to real world situations

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Student Learning Outcome #2: The student will be able to solve selected differential equations using **graphical**, **numerical**, and **analytical** methods.

Supporting Student Activities:
Class Discussion
Text Readings
Modeling of problem solving in class
Practice problem solving in groups
Practice problem solving at home

Student Learning Outcome #3: The student will be able to represent function with power series and approximate functions with Taylor polynomials.

Supporting Student Activities:
Class Discussion
Text Readings
Modeling of problem solving in class
Practice problem solving in groups
Practice problem solving at home

Part III A: The Assessment Tool

Student Learning Outcome #1: The student will be able to **set up**, **evaluate**, and **interpret** integrals that model applications in physics.

1. The table shows the velocity v(t) in ft/s of a bicycle every 2 seconds.

t (s)	0	2	4	6	8
v (ft/s)	24	22	16	10	0

   a) What does $\int_0^8 v(t)dt$ tell about the bicycle? Be specific and include the correct units

   b) Use the Trapezoidal Rule with two trapezoids to approximate $\int_0^8 v(t)dt$.

Scoring:
Part a: 6 points (satisfactory score: 4 or more)

3 points for "total distance traveled"
1 point for "ft"
2 points for "from t = 0 to t = 8 s." or "for the 8 seconds"

Scoring part b: 8 points (satisfactory score: 6 or better)

7 points for writing correct expression for sum of two trapezoidal areas
1 point for correct answer with correct units

Student Learning Outcome #2: The student will be able to solve selected differential equations using **graphical**, **numerical**, and **analytical** methods.

Solve $\dfrac{dy}{dx} = \dfrac{xe^{2x}}{y}$ for y by separating the variables.

Scoring:

15 points (satisfactory score – 11 or better)

2 points to separate the variables
1 point to take the integral of both sides
1 point to integrate y
6 points for integration by parts work through $uv - \int vdu$

2 points to integrate $\dfrac{1}{2}e^{2x}$

1 point for + C

2 points to solve for y

Student Learning Outcome #3: The student will be able to represent function with power series and approximate functions with Taylor polynomials.

The Taylor's Series of the function f at a is

$$f(x) = f(a) + \frac{f'(a)}{1!}(x-a) + \frac{f''(a)}{2!}(x-a)^2 + ... + \frac{f^{(n)}(a)}{n!} + ...$$

a. Find the Taylor polynomial of degree 2 for $y = x^{1/3}$ with center $a = 8$.

b. Use the result from part (a) to approximate the value of $\sqrt[3]{9}$. Give your answer to 4 decimal places.

Scoring:
Part a: 8 points (satisfactory score: 6 or better)

2 points -1 point for y' and 1 point for y"
3 points - 1 point each for evaluating y, y', and y" at x = 9
2 points – write polynomial
1 point – simplify polynomial

Part b: 3 points (satisfactory score: 2 or better)

2 points for correctly substituting into part a
1 point for writing approximation to 4 decimal places

Part III B: Scoring the Assessment

Use the following to score the MA 182 Assessments

SLO #1

Part a: 6 points (satisfactory score: 4 or more)

3 points for "total distance traveled"
1 point for "ft"
2 points for "from t = 0 to t = 8 s." or "for the 8 seconds"

Part b: 8 points (satisfactory score: 6 or better)

7 points for writing correct expression for sum of two trapezoidal areas
1 point for correct answer with correct units

SLO #2-

Scoring – 15 points (satisfactory score – 11 or better)
- 2 points to separate the variables
- 1 point to take the integral of both sides
- 1 point to integrate y
- 6 points for integration by parts work through uv – $\int$ vdu
- 2 points to integrate $\frac{1}{2}e^{2x}$
- 1 point for + C
- 2 points to solve for y

SLO #3-
Part a Scoring: 8 points (satisfactory score: 6 or better)
- 2 points -1 point for y' and 1 point for y"
- 3 points - 1 point each for evaluating y, y', and y" at x = 9
- 2 points – write polynomial
- 1 point – simplify polynomial

Part b Scoring: 3 points (satisfactory score: 2 or better)
- 2 points for correctly substituting into part a
- 1 point for writing approximation to 4 decimal places

Scoring Results in Spreadsheet
Professors will enter each student's score for 1a, 1b, 2, 3a, and 3b. Any number of points may be given for partial credit on each item.

Part III C: Data Collection Page

Student Learning Outcome #1: The student will be able to **set up**, **evaluate**, and **interpret** integrals that model applications in physics.

Column Heading(s)	Min/Max Score	Decimal Allowed?	Satisfactory Score
v(t) Integral A	0 Min/6 Max	No	4 or more
v(t) Integral B	0 Min/ 8 Max	No	6 or more

Student Learning Outcome #2: The student will be able to solve selected differential equations using **graphical**, **numerical**, and **analytical** methods.

Column Heading(s)	Min/Max Score	Decimal Allowed?	Satisfactory Score
Separable DE	0 Min/ 15 Max	No	11 or more

Student Learning Outcome #3: The student will be able to represent function with power series and approximate functions with Taylor polynomials.

Column Heading(s)	Min/Max Score	Decimal Allowed?	Satisfactory Score
Taylor Poly A	0 Min/ 8 Max	No	6 or more
Taylor Poly B	0 Min/ 3 Max	No	2 or more

Recommendations and Observations Forms and Instructions

Blank forms can be found at
http://www.montgomerycollege.edu/outcomes/

OUTCOMES ASSESSMENT
Instructions for Discipline Student Learning Outcomes (SLO)
Observations Worksheet

Outcomes Assessment (OA) is a systematic process which helps align goals, activities and student learning. The results of this process should be used to enhance student learning and inform collegewide planning. Outcomes Assessment generally follows a cycle of planning, implementation and analysis.

You are currently in the final, analysis phase, the purpose of which is to use the collected information to identify strengths **and** to reflect on and address concerns regarding the student learning outcomes. In this phase, we ask that you use your assessment results and reflect on your assessment process to note observations or conclusions about the assessment, and then propose preliminary recommendations, where appropriate, that follow from these observations. You are encouraged to discuss your successes and the factors which are responsible for your success in addition to any results which you consider less successful.

Observations, reported by each campus or by the discipline, depending on the discipline size and structure, should be reported on the OA Observations Worksheet. These observations and preliminary recommendations should be used as a basis for collegewide discussions about final recommendations. Discipline recommendations, which are the actions the discipline will pursue, based on the data and assessment process, will be reported on the Summary Recommendations Form after observation discussions have concluded.

Tips for completing the Observations Worksheet:

1. Share copies of the assessment instrument, the rubric and the data report with those involved in the discussion. (The majority of full and part-time faculty who typically teach the course should be involved in this discussion.)
2. Plan a meeting to discuss the process, materials and results. (You may want to use a department meeting.)
3. Discuss the assessment materials, the course, and the results using the suggested discussion questions below or other questions you might develop. (Please contact the OA Team if you would like a team member to facilitate your meeting.)
4. Based on your discussion, record the primary observations and preliminary recommendations on the OA Observations Worksheet. Be sure to include a summary of the overall strengths and concerns noted based on the assessment project. At a minimum, please make sure that there are preliminary recommendations that address each area of concern. For areas of strength, recommendations should focus on what activities should be replicated.
5. Turn in an electronic copy of the Observations Worksheet to your OA faculty CADRE member for review by the due date in May, and save a copy to use in collegewide discussions.

Learning Outcomes:
- o Were the learning outcomes that were assessed core outcomes for the course; that is, did they describe the kind of analytical or critical thinking, or skills and abilities, that the discipline feels all successful students should take away from the course?
- o Were students made aware of these learning outcomes prior to the assessment, and if so how?

Assessment Instrument:
- o Did the assessment questions or assignments assess the learning outcomes; that is, did student performance on these provide strong information about how well students achieved the learning outcomes?
- o Were the assessment questions or assignments clearly worded?
- o Do classroom experiences align with or support the intended outcomes and the assessment, so that students are prepared to succeed?

Assessment Rubric:
- o For assessment questions that weren't objective in nature, e.g., multiple choice or fill in the blank, was your scoring rubric clear and easy to apply?
- o Did the rubric adequately reflect the standards that your discipline adheres to?

Assessment Process:
- o Was communication about the expectations of the process clear and early enough to all instructors who participated in the full-scale implementation?
- o Was the assessment administered with reasonable uniformity across all sections; e.g., approximately the same timeframe of the semester, similar explanations to students, etc.
- o Did instructors understand how to enter data into the scoring spreadsheets?

Assessment Results:
- o What do the assessment results say about how well all students, or particular subgroups of students based on the data breakouts, achieve the intended learning outcomes?
- o Are there new or different things that the discipline thinks would be worth trying that might improve future results?
- o Is there additional analysis of the existing data that might provide greater insight into the meaning of the results?

Overall Strengths
- o What general strengths or positive observations arise from this OA project?
- o What results or observations should be acknowledged as strengths?

Overall Concerns
- o What concerns are raised by the results?
- o What concerns are raised by this OA project?

OUTCOMES ASSESSMENT
Discipline Student Learning Outcomes (SLO) Observations Worksheet

Course:	Campus:	Point of Contact:

Assessment Process (Including SLO's, assessment instrument, rubric and scoring tools, and the process.)	Observations:
Assessment Results (What does the data say?)	Observations:
Overall Summary Observations	Strengths: Concerns:
Preliminary Recommendations	1. 2. 3.

NOTE: One electronic copy of this form should be submitted to the course OA faculty CADRE member by the **due date in May**.

OUTCOMES ASSESSMENT

Instructions for Discipline Student Learning Outcomes (SLO) Summary Recommendations Form

Once each campus has had the opportunity to review the course assessment data and make observations, there should be a collegewide discipline discussion for the purpose of developing discipline **recommendations**. The purpose of this discussion is to share observations and adopt recommendations for collegewide implementation.

Discipline discussions will most optimally take place during a professional week when Collegewide gatherings are more easily achieved. Preliminary recommendations and observations should be shared regarding student achievement and the process. These discussions should result in a list of recommendations which the discipline and campuses will undertake in the next two to three years. At a minimum, recommendations should address each concern the discipline noted.

Recommendations should generally take two forms:

1. Identification of specific activities or practices that are working and can be replicated (i.e. communicating and replicating best practices) or

2. Identification of areas of weakness and specific activities or practices that can be used to improve student learning.

Please Note: We often see recommendations which focus only on the OA project or the OA tool. While those may be **useful if you are going to repeat the assessment in the next semester**, recommendations that primarily focus on the assessment tool or process are less connected to improving student learning. Recommendations should be **specific and action oriented** so that they can be incorporated into practice as soon as possible. Recommendations that indicate reassessment of courses to measure change over a period of time should also be considered.

Instructions for discipline discussions:

1. Share copies of the assessment instrument, the rubric, the data report, and the Observations Worksheet with those involved in the discussion. (The majority of faculty collegewide who typically teach the course should be involved in this discussion.)
2. Plan a collegewide meeting to discuss the process, materials, results and recommendations. (You may want to use a discipline meeting.)
3. Discuss the assessment materials, the course, and the results using the suggested questions below or other questions you might develop. (Please contact the OA Team if you would like a team member to facilitate your meeting.)
4. Based on your discussion, develop discipline **recommendations** that will be implemented. **At a minimum, the discipline should put forward recommendations to address each area of concern.**
5. Send the summary of recommendations to the lead dean who is responsible for the discipline requesting comment and sign off.
6. Submit an electronic copy of the OA Summary Recommendations Form, and forward lead dean's approval, to Outcomes at outcomes@montgomerycollege.edu by the **due date in June.**

<div align="center"><u>Suggested Discussion Questions</u></div>

Learning Outcomes:
- o Were the learning outcomes that were assessed core outcomes for the course; that is, did they describe the kind of analytic or critical thinking, or skills and abilities, that the discipline feels all successful students should take away from the course?
- o Were students made aware of these learning outcomes prior to the assessment, and if so how?

Assessment Instrument:
- o Did the assessment questions or assignments assess the learning outcomes; that is, did student performance on these provide strong information about how well students achieved the learning outcomes?
- o Were the assessment questions or assignments clearly worded?
- o Do classroom experiences align with or support the intended outcomes and the assessment, so that students are prepared to succeed?

Assessment Rubric:
- o For assessment questions that weren't objective in nature, e.g., multiple choice or fill in the blank, was your scoring rubric clear and easy to apply?
- o Did the rubric adequately reflect the standards that your discipline adheres to?

Assessment Process:
- o Was communication about the expectations of the process clear and early enough to all instructors who participated in the full-scale implementation?
- o Was the assessment administered with reasonable uniformity across all sections; e.g., approximately the same timeframe of the semester, similar explanations to students, etc.
- o Did instructors understand how to enter data into the scoring spreadsheets?

Assessment Results:
- o What do the assessment results say about how well all students, or particular subgroups of students based on the data breakouts, achieve the intended learning outcomes?
- o Are there new or different things that the discipline thinks would be worth trying that might improve future results?
- o Is there additional analysis of the existing data that might provide greater insight into the meaning of the results?

Overall Strengths
- o What general strengths or positive observations arise from this OA project?
- o What results or observations should be acknowledged as strengths?

Overall Concerns
- o What concerns are raised by the results?
- o What concerns are raised by this OA project?

OUTCOMES ASSESSMENT

Discipline Student Learning Outcomes (SLO) Summary Recommendations and Action Plan Form

Course:	Point of Contact:

Summary Outcomes Assessment Report: *Provide specific analysis of the data from the assessment and discuss the successes or concerns related to what the data indicates regarding student learning.*

Student Learning Outcomes (SLO) Assessed:	Observations of Successes and Concerns:
SLO #1.	
SLO #2.	
SLO #3.	
General Observations:	

Summary Recommendations and Action Plan: *List the discipline's collegewide recommendations. Articulate any changes being considered as a result of the SLO assessment. Do the results of this assessment indicate a need for another assessment? When? Why? As a result of the assessment, is the discipline considering any modifications to improve the learning outcome? What are they? When will they occur? Do they involve other disciplines?*

1.
2.
3.

Instructions: One electronic copy of this form reflecting discipline consensus and lead dean approval should be submitted to the Outcomes Assessment mailbox at outcomes@montgomerycollege.edu **by the due date in June.**

_____
Lead Dean   Approval Date

Workgroup Members:

Appendix B

Protocol for Collection of SLO Data General Education Information

MONTGOMERY COLLEGE
Office of the Senior Vice President for Academic and Student Services

June 1, 2010

MEMORANDUM

To: Collegewide Faculty

From: Paula Matuskey, Interim Senior Vice President for Academic and Student Services
Marshall Moore, Senior Vice President for Administrative and Fiscal Services

Subject: Protocol for Collection of Student Learning Outcomes (SLO) Data

The purpose of this memo is to distribute the Protocol for Collection and Use of Student Learning Outcomes Assessment Data at Montgomery College. Once again this year we are in the process of collecting data for Outcomes Assessment and for assessing learning outcomes. This activity supports requirements of the Maryland Higher Education Commission and our Middle States accreditation process. Its purpose is to measure the effectiveness of academic experiences in achieving the intended student learning outcomes for a course or program. It is not intended, as clearly stated in the protocol, and will not be used to evaluate individual faculty members. Please review this document carefully, and direct any questions to the Outcomes Assessment Office at 240-567-4193 or by email to outcomes@montgomerycollege.edu.

We wish you every success as we move forward together to assess the effectiveness of our programs, courses, activities and services in achieving their learning outcomes, and determine how to use the results appropriately to improve academic experiences.

Attachment

cc: Vice President and Provosts
        Instructional Deans
        Deans of Student Development
        Chair, Academic Assembly
        Chair, Staff Senate
        President, AAUP

Protocol for Collection and Use of
Student Learning Outcomes Assessment Data at Montgomery College

1. Purpose of Student Learning Outcomes (SLO) Assessment Projects:

Montgomery College is committed to Outcomes Assessment as outlined in the *Greater Expectations* report issued by the American Association of Universities and Colleges. Efforts to strengthen Outcomes Assessment in all aspects of Montgomery College are particularly important given the emphasis ascribed to these initiatives by The Middle States Association and the Maryland Higher Education Commission. Both agencies are now mandating assessment data for reaccreditation and annual state reporting.

The primary purpose of the SLO assessment projects is to measure the effectiveness of academic experiences, i.e., programs, courses, activities, and services in achieving their intended student learning outcomes, and to use the results to celebrate our successes as well as to improve these academic experiences as necessary and appropriate. *SLO assessment data will not be used to evaluate the performance of individual faculty members or any other College personnel.*

2. Type of SLO Data Generally Required

SLO assessment data will be most valuable to faculty if the researchers* have the capability of breaking out the data according to particular student characteristics, such as number of credits completed. In order to do this it is essential that SLO assessment data be identifiable by student. Some assessment projects prefer to have blind scoring, but data must still be reported by the student's ID number.

3. Confidentiality of SLO Data

The raw data used in assessing SLO's will not be made available by the researchers to College administrators or any individuals who are directly involved with the College's faculty evaluation process. In general, SLO assessment record data, that is data identifiable by a student or faculty identifier, will be available only to the researchers, or to an individual designated by the participating faculty member for data entry purposes.

4. Reporting of SLO Assessment Data

Under no circumstances will data be reported in such a way that would make it possible for the information to be linked to an individual student or faculty member. So that results cannot be linked to any one faculty member, only data that has been aggregated across courses taught by at least 3 faculty members will be reported. Individual faculty can request their data from the researchers.

* Within this document "researchers" refers to Outcomes Assessment Team faculty members and Office of Institutional Research and Analysis (OIRA) staff involved with the analysis of Outcomes Assessment data.

The Five Initial General Education Competencies

1. Written and oral communication:

Competency in written and oral communication includes the ability to communicate effectively in verbal and written language, the ability to use a variety of modern information resources and supporting technologies, the ability to differentiate content from style of presentation, and the ability to suit content and style to the purpose of communication.

2. Scientific and quantitative reasoning:

Competency in scientific and quantitative reasoning includes the ability to locate, identify, collect, organize, analyze and interpret data, and the ability to use mathematics and the scientific method of inquiry to make decisions, where appropriate.

3. Critical analysis and reasoning:

Competency in critical analysis and reasoning includes the application of higher order analytic and creative cognitive processes to arrive at reasoned and supportable conclusions, to synthesize and apply knowledge within and across courses and disciplines, and to develop creative solutions.

4. Technological competency:

Technological competency includes the ability to use computer technology and appropriate software applications to produce documentation, quantitative data presentations and functional graphical presentations appropriate to various academic and professional settings.

5. Information literacy:

Information literacy includes the ability to identify, locate and effectively use information from various print and electronic sources.

Note: Additional competencies are under consideration by the Collegewide General Education Committee.

Appendix C
TracDat Instructions

Instructions for Entering Outcomes Assessment Data in TracDat

Please enter all data by the same time final grades are due.

1. Check your MC email account for an email from the **Outcomes** mailbox. The email should have been sent around the middle of the semester and is titled *Outcomes Assessment for <Course Name>-<CRN>*.

    Upon receiving the email, verify your course name and CRN in the subject line.

    If you notice any errors, please contact your Cadre member immediately. Otherwise, read the email for important information.
    There are three links in the email.
    a. The first link you see, will add the assignment to your MC Outlook Calendar.
    b. The second link, in the body of the email, is a link to these instructions.
    c. The last link, or the third link, is the link to the data collection spreadsheet.

2. Click the link to the spreadsheet. Be sure to **maximize the browser** window size for the data entry page; if the browser is not full size, the spreadsheet may appear distorted.

3. Enter data as instructed.

4. As you enter data, periodically click "save changes". You can go back and add more data at any point.

5. **VERY IMPORTANT**-

   DO NOT click '**Mark Assignment as Completed'** until you are **COMPLETELY** finished entering data. This will deactivate the link, and you will be unable to go back to edit or add more data. (If you do mistakenly click on "Mark Assignment as Completed" before you are finished entering all your data, please notify your Cadre member.) When you are ready to SUBMIT your FINAL DATA, click Mark Assignment as Completed.

For other information regarding Collegewide Outcomes Assessment initiative, check out the web site
www.montgomerycollege.edu/outcomes.

Appendix D
Additional Resources

AAHE's 9 Principles of Good Practice for Assessing Student Learning

1. **The assessment of student learning begins with educational values.** Assessment is not an end in itself but a vehicle for educational improvement. Its effective practice, then, begins with and enacts a vision of the kinds of learning we most value for students and strive to help them achieve. Educational values should drive not only *what* we choose to assess but also *how* we do so. Where questions about educational mission and values are skipped over, assessment threatens to be an exercise in measuring what's easy, rather than a process of improving what we really care about.

2. **Assessment is most effective when it reflects an understanding of learning as multidimensional, integrated, and revealed in performance over time.** Learning is a complex process. It entails not only what students know but what they can do with what they know; it involves not only knowledge and abilities but values, attitudes, and habits of mind that affect both academic success and performance beyond the classroom. Assessment should reflect these understandings by employing a diverse array of methods, including those that call for actual performance, using them over time so as to reveal change, growth, and increasing degrees of integration. Such an approach aims for a more complete and accurate picture of learning, and therefore firmer bases for improving our students' educational experience.

3. **Assessment works best when the programs it seeks to improve have clear, explicitly stated purposes.** Assessment is a goal-oriented process. It entails comparing educational performance with educational purposes and expectations -- those derived from the institution's mission, from faculty intentions in program and course design, and from knowledge of students' own goals. Where program purposes lack specificity or agreement, assessment as a process pushes a campus toward clarity about where to aim and what standards to apply; assessment also prompts attention to where and how program goals will be taught and learned. Clear, shared, implementable goals are the cornerstone for assessment that is focused and useful.

4. **Assessment requires attention to outcomes but also and equally to the experiences that lead to those outcomes.** Information about outcomes is of high importance; where students "end up" matters greatly. But to improve outcomes, we need to know about student experience along the way -- about the curricula, teaching, and kind of student effort that lead to particular outcomes. Assessment can help us understand which students learn best under what conditions; with such knowledge comes the capacity to improve the whole of their learning.

5. **Assessment works best when it is ongoing not episodic.** Assessment is a process whose power is cumulative. Though isolated, "one-shot" assessment can be better than none, improvement is best fostered when assessment entails a linked series of activities undertaken over time. This may mean tracking the process of individual students, or of cohorts of students; it may mean collecting the same examples of student performance or using the same instrument semester after semester. The point is to monitor progress toward intended goals in a spirit of continuous improvement. Along the way, the assessment process itself should be evaluated and refined in light of emerging insights.

6. **Assessment fosters wider improvement when representatives from across the educational community are involved.** Student learning is a campus-wide responsibility, and assessment is a way of enacting that responsibility. Thus, while assessment efforts may start small, the aim over time is to involve people from across the educational community. Faculty play an especially important role, but assessment's questions can't be fully addressed without participation by student-affairs educators, librarians, administrators, and students. Assessment may also involve individuals from beyond the campus (alumni/ae, trustees, employers) whose experience can enrich the sense of appropriate aims and standards for learning. Thus understood, assessment is not a task for small groups of experts but a collaborative activity; its aim is wider, better-informed attention to student learning by all parties with a stake in its improvement.

7. **Assessment makes a difference when it begins with issues of use and illuminates questions that people really care about.** Assessment recognizes the value of information in the process of improvement. But to be useful, information must be connected to issues or questions that people really care about. This implies assessment approaches that produce evidence that relevant parties will find credible, suggestive, and applicable to decisions that need to be made. It means thinking in advance about how the information will be used, and by whom. The point of assessment is not to gather data and return "results"; it is a process that starts with the questions of decision-makers, that involves them in the gathering and interpreting of data, and that informs and helps guide continuous improvement.

8. **Assessment is most likely to lead to improvement when it is part of a larger set of conditions that promote change.** Assessment alone changes little. Its greatest contribution comes on campuses where the quality of teaching and learning is visibly valued and worked at. On such campuses, the push to improve educational performance is a visible and primary goal of leadership; improving the quality of undergraduate education is central to the institution's planning, budgeting, and personnel decisions. On such campuses, information about learning outcomes is seen as an integral part of decision making, and avidly sought.

9. **Through assessment, educators meet responsibilities to students and to the public.** There is a compelling public stake in education. As educators, we have a responsibility to the publics that support or depend on us to provide information about the ways in which our students meet goals and expectations. But that responsibility goes beyond the reporting of such information; our deeper obligation -- to ourselves, our students, and society -- is to improve. Those to whom educators are accountable have a corresponding obligation to support such attempts at improvement.

Authors: Alexander W. Astin; Trudy W. Banta; K. Patricia Cross; Elaine El-Khawas; Peter T. Ewell; Pat Hutchings; Theodore J. Marchese; Kay M. McClenney; Marcia Mentkowski; Margaret A. Miller; E. Thomas Moran; Barbara D. Wright

http://www.aahe.org/assessment/principl.htm

<center>**Sample Outcomes Assessment Instructions**</center>

Montgomery College is participating in an evaluation process known as Outcomes Assessment. All sections of Introduction to Taxidermy 101 will be participating in this project during the Fall 2010 semester. This packet contains information about this project as well as instructions on how to conduct the evaluation protocol developed by Montgomery College and our department.

1. Please read the Assessing Student Learning Outcomes handout and the college statement about the project included in this packet.

2. Through an Internet Assignment, anthropology faculty will measure student effectiveness in three areas: information literacy, student writing, and course content. All instructors (both full-time and adjunct) teaching TX 101 **MUST** have their students complete this assignment (handout included in this packet) during the last 3 weeks in the semester.

3. Faculty will grade the assignment and score the students' work using the Rubric for the TX 101 Internet Assignment (also included in the packet). To facilitate using the rubric, each instructor will receive an Excel spreadsheet with the categories in place. The instructor will enter the identification numbers from the class roster and score the students' work as below standard, standard, or above standard for each of the nine areas listed on the rubric. The internet assignment should be graded and scored using the rubric during the last 3 weeks in the semester.

4. All instructors will submit their completed rubrics for their class to the Outcomes Assessment team at the college (outcomes@montgomerycollege.edu). If you are teaching at Germantown, please notify (Sonia.Henie@montgomerycollege.edu). If you are teaching at Rockville please notify (Tom.Clancy @montgomerycollege.edu). If you are teaching at Takoma Park/Silver Spring please notify (Tom.Stoppard@montgomerycollege.edu). These individuals are available at any time to answer any questions or help with problems about the assignment or the rubric.

5. Please note that the grade you give to students for this assignment may be different from the rubric score you submitted to the Outcomes Assessment Team. Also note that you are free to share as much or as little of the rubric as you wish with your students before or after their participation in this project.

The College will be investigating the scores and their relationship to variables such as gender, age, total credits completed at the college, and if the students have completed EN 101 and EN 102. The findings will be discussed during the Spring 2011 professional week meetings and the results will be shared with all participating instructors.

Thank you for your efforts and compliance to help us complete this project successfully.

Tom Clancy 240-567-XXXX   Sonia Henie 240-567-XXXX   Tom Stoppard 240-567-XXXX

Sample Rubrics for an Information Literacy Outcome

Outcome: Identifying, locating, and making effective use of information from various electronic and print sources.

Holistic rubric

- o **Exemplary** – Demonstrates all or most of the following
  - Develops clear, manageable, and focused research questions or thesis statement.
  - Identifies the purpose and audience of potential resources, correctly selects from popular and academic sources, primary and secondary sources for the given assignment.
  - Explores and retrieves information from a wide variety of both electronic and print sources, including full-text indexes or databases; displays an understanding that potential sources may have specific purposes and audiences.
  - Summarizes main ideas from information sources and can restate textual concepts in own words with appropriate citations.

- o **Satisfactory** – Demonstrates all or most of the following
  - Develops research questions or thesis statement, but may be somewhat too broad or specific for assignment scope.
  - Correctly distinguishes between popular and academic sources, primary and secondary sources.
  - Retrieves information from both electronic and print sources, but doesn't display an understanding that potential sources may have specific purposes and audiences.
  - Identifies verbatim material and appropriately quotes and cites it.

- o **Unsatisfactory** – Demonstrates all or most of the following
  - Research questions or thesis statement unclear. May be far too broad or specific for assignment scope.
  - Does not distinguish between types of potential sources or chooses inappropriate sources for the given assignment.
  - Only retrieves information from either electronic or print sources, primarily relies on one or the other to the exclusion of other appropriate sources.
  - Cannot summarize main ideas accurately and clearly. Does not cite sources appropriately.

Overall score:

Dimensional rubric

Dimensions	Exemplary	Satisfactory	Unsatisfactory
Identify info needs Score:	Develops clear, manageable, and focused research questions or thesis statement. Identifies the purpose and audience of potential resources, correctly selects from popular and academic sources, primary and secondary sources for the given assignment.	Develops research questions or thesis statement, but may be somewhat too broad or specific for assignment scope. Correctly distinguishes between popular and academic sources, primary and secondary sources.	Research questions or thesis statement unclear. May be far too broad or specific for assignment scope. Does not distinguish between types of potential sources or chooses inappropriate sources for the given assignment.
Locate info Score:	Explores and retrieves information from a wide variety of both electronic and print sources, including full-text indexes or databases; displays an understanding that potential sources may have specific purposes and audiences.	Retrieves information from both electronic and print sources, but doesn't display an understanding that potential sources may have specific purposes and audiences.	Only retrieves information from either electronic or print sources, primarily relies on one or the other to the exclusion of other appropriate sources.
Make effective use of info Score:	Summarizes main ideas from information sources and can restate textual concepts in own words with appropriate citations.	Identifies verbatim material and appropriately quotes and cites it.	Cannot summarize main ideas accurately and clearly. Does not cite sources appropriately.
Overall score:			

Pros and Cons of Using Various Types of Assessment

	Pros	Cons
Objective Exams (e.g., Multiple-Choice, True/False, Matching, Short Answer)	Faculty familiar with developing them	Feedback to student can be limited
	Easier to monitor possible plagiarism and cheating	May encourage surface learning only
	Cost-effective	Possibly measure students' test-taking ability vs. content knowledge & understanding
	Time-efficient to administer	Questions may be misinterpreted
	Facilitates rapid feedback through ease of scoring	May involve testing for low level knowledge only
	Broad coverage of content	Constructing high quality test questions may be difficult
		Generally, reliability and validity of tests are unknown
		Tendency to rely on publishers' test banks

Tips for Objective Tests
- Collaborate on selected test questions to make sure they are targeting what you really want to assess
- Have unbiased readers check for misinterpretation
- Pay attention to question layout – make the test easy to follow
- Match your standards – it is easy for questions to get progressively more difficult year by year because YOU understand the material in a deeper way
- Always match syllabus objectives, intended learning outcomes and assessment questions. These should align directly.
- Let students know (by bracketing information on the test) how many points each question is worth and how much time it should take them to complete each section.
- Test questions out beforehand by embedding parts of the exam or similar questions in class assignments. See which ones are misunderstood ahead of time. Make changes as needed.

	Pros	Cons
Essay Exams	Allow for student individuality & expression	ESL students or students with poor writing/thinking skills may be at a disadvantage
	Can reflect the depth of student understanding and higher order thinking skills	May not cover entire range of knowledge
	May include application of Problem-Based learning	Take time to grade
	Develop writing and critical thinking skills	Consistency of grading may be an issue
	Inexpensive and easy to administer; fast to construct	Possible confusion about what is being assessed: writing skills, content, or both

Tips for Essay Exams
- Create well-designed rubric for grading
- Assessment grading team should take time to calibrate their grading so that scores from all the sections of a course are consistent
- Give students criteria for grading essays beforehand and examples of well-written versus poorly written essays
- Show students how to create essay "organizers" for answering essay questions. This organizational structure helps students keep focused in their essays.

	Pros	Cons
Written work (reports, papers, research projects, book reviews, etc.)	Active process involving critical thinking skills and revision skills	May be difficult to judge the breadth of student learning
	More flexible for students in preparing the end product	Plagiarism may occur
	Learning occurs in the process as well as in the completion of the end product	Takes time to grade
	Usually represents integrated learning	Not easily quantified
	Offers students the opportunity to demonstrate learning	

Tips for Writing Assignments
- Make the assessment criteria explicit for written work
- Create well-designed rubric for grading
- Assessment grading team should take time to calibrate their grading so that scores from all the sections of a course are consistent
- Give students an understanding of the "weight" and distribution of the grade: e.g., content, correct form, and level of critical thinking
- Encourage students to submit drafts to facilitate student learning and for better end products
- You may consider using peer assessment before the final products are submitted
- Giving students timelines for completion may assist them in time management

	Pros	Cons
Portfolio Assessment	May contain evidence reflecting a wide range of skills & attributes such as research papers, exams, journals, case studies, CD-ROMs, DVDs, audio and videotapes, artwork, etc.	Assessment takes time
	Can reflect student learning over time	Difficult to assess objectively
	May reflect attitudes and values as well as skills & knowledge	Difficulty in grading consistency across diverse sets of portfolios
	Usually represents integrated learning	Not easily quantified
	Offers students the opportunity to demonstrate learning	Space needed for storage

Tips for Portfolio Assessment
- Propose a general format for assembly of portfolios and necessary items for inclusion
- Don't underestimate the time it takes to assess (or the weight to transport them!)
- Use rubrics and checklists for content assessment
- Provide interim assessment opportunities
- Allow students to see samples of successful portfolios
- Consider a final reflection on learning as part of the portfolio

Additional Resources on Assessing Student Learning Outcomes

<u>**Websites**</u>
The following are links to scholastic institutions that have strong and effective Outcomes Assessment programs:

www.montgomerycollege.edu/outcomes (Montgomery College)

www.2.acs.ncse.edu/UPA/assmt/resource.htm (NC State; an extensive set of internet resources)

www.csufresno.edu/cetl/assessment/assmnt.html (Califonia State at Fresno)

www.umuc.edu/outcomes/index.shtml (University of Maryland, University College)

www.ccbcmd.edu/loa/index.html (Community College of Baltimore County)

<u>**Books**</u>
The following are some print resources that provide excellent additional information about assessing student learning outcomes:

Allen, Mary J. <u>Assessing Academic Programs in Higher Education.</u> Boston: Anker Publishing Co, 2004.

U.S. Department of Education. <u>Defining and Assessing Learning: Exploring Competency-Based Initiatives,</u> Washington D.C.: U.S. Department of Education,   2002

Huba, Mary E. and Jann E. Freed. <u>Learner-Centered Assessment on College Campuses: Shifting the Focus from Teaching to Learning.</u> Needham Heights: Allyn & Bacon, 2000

Middle States Commission on Higher Education. <u>Student Learning Assessment, Options *and* Resources</u>. Philadelphia: Middle States Commission on Higher Education, 2003.

Nichols, James. <u>A Practitioner's Handbook for Institutional Effectiveness and Student Outcomes Assessment Implementation.</u> New York: Agathon Press, 1991.

Palomba, Catherine A., and Trudy W. Banta. <u>Assessment Essentials: Planning, Implementing, and Improving Assessment in Higher Education</u>. San Francisco: Jossey-Bass, 1999.

Walvoord, Barbara E. <u>Assessment Clear and Simple: A Practical Guide for Institutions, Departments, and General Education.</u> San Francisco: Jossey-Bass, 2004