

**Student Learning  
Outcomes and  
Assessment  
Manual**

**Laney College**

## **Acknowledgements and Thanks**

**Much of this material was written by Marcy Alancraig at Cabrillo College. Additions and modifications were made by Cheli Fossum at Laney College.**

**Huge, extravagant thanks to Marcy Alancraig for generously allowing us to use and modify her work.**

**Note that throughout this manual, much reference is made to Cabrillo College and its faculty. The ideas and framework of this learner-centered approach are supported by lots of research AND by the actual experience of real people (Cabrillo faculty) that participated in the Learner Outcomes Summer Institute. We thank them for trying out these methods for us so that we can learn from their experiences.**

**Check the Learning Assessment Committee website for more information:  
[www.laney.peralta.edu/learningassessment](http://www.laney.peralta.edu/learningassessment)**

**August 2007**

## Table of Contents

Overview	5
General Information on Student Learning Outcomes	5
<b>Part 1: Background and Overview</b>	<b>7</b>
Introduction: What Is Assessment And Why Are We Doing It?	8
Overview of the Assessment Process	10
<b>Part 2: Writing Student Learning Outcomes</b>	<b>12</b>
SLOs versus Course Objectives	13
Knowledge Outcomes	14
Skills and Abilities Outcomes	15
Attitude Outcomes	16
Writing Student Learning Outcomes	17
Sample Student Learning Outcomes	18
Sample Student Learning Outcomes written by Laney College instructors	20
Writing Student Learning Outcomes Worksheet	23
Checklist for Writing Student Learning Outcomes	25
<b>Part 3: Aligning Course Activities with SLOs</b>	<b>26</b>
Overview	27
Aligning Activities with Outcomes: Skeleton Building	28
Course Alignment Worksheet I	29
Skeleton Checklist	30
Assignment Evaluation	31
Assignment Evaluation Worksheet	32
Assignment Skills to Class Activities To Outcomes	33
Course Alignment Worksheet II	34
Working with Different Learning Styles	38
Identifying Your Learning Style	39
Identifying Learning Styles Worksheet	40
Analyzing Your Teaching Methods	42
Designing New Activities	43
Revised Course Alignment Worksheet	44
Learner-Centered Teaching	48
Learner-Centered Teaching: The Theory	49
Sources for Active Learning	51
Analyzing Your Teaching	52
<b>Part 4: Assessing Student Mastery of SLOs</b>	<b>53</b>
Assessment Methods	54
Using Rubrics – Overview	56
Introduction to Rubrics	57
Sample Rubrics	59
How to Construct a Rubric	74

Rubric Scoring and Translation to Grades	74
Defining Rubric Components	76
Rubric Component Worksheet	76
Describing Levels of Success	77
Making A Rubric Document	82
How to Use a Rubric to Collect Assessment Information	83
Resources – Rubrics	84
<b>Part 5: Program Outcomes and Assessment</b>	<b>85</b>
Program Outcomes	86
Process for Determining Program Outcomes	87
Checking for Alignment	88
Program Outcomes Alignment Matrix	88
Assessing Program Outcomes	90
<b>Resources</b>	<b>92</b>

## Overview

This workbook is designed to help you use Student Learning Outcomes (SLOs) in the classroom. It is created for faculty who are interested in learning how to use SLOs effectively as part of your course.

The workbook has five main sections:

1. Background and Overview
2. Writing Student Learning Outcomes
3. Aligning Classroom Activities with SLOs
4. Assessing Student Mastery of SLOs
5. Program Outcomes and Assessment

It will be helpful to read all of the following sections to understand how organizing a course around its SLOs will improve the teaching and learning experience.

## General Information on Student Learning Outcomes

In the new Accreditation Standards, a Student Learning Outcome (SLO) describes the:

- knowledge
- skills
- abilities
- attitudes

that students have attained by the end of any set of college experiences – classes, occupational programs, degrees and certificates and even encounters with Student Services or the Library. The stress is on what students can **DO** with what they have learned, resulting in some sort of product that can be evaluated.

Faculty must articulate student learning outcomes for each **course**, each **occupational program** and each **degree** and **certificate** that the school offers. Then, they must design assessments or evaluations that provide students with an opportunity to demonstrate what they have learned. Evaluating those assessments gives information to both the student and to the faculty member about how successful the learning experience has been.

In the classroom, the new Accreditation Standards require that SLOs become an integral part of every syllabus. SLOs should also act as a guide for classroom activities and direct classroom assessments or evaluations.

### Theory

This approach to teaching asserts that “covering” material during a course does not necessarily **guarantee** that students learn it. The instructor has delivered the course, but how do we know if

the students have truly absorbed the material, or better yet, can apply it? The new Accreditation Standards state that success and retention are no longer considered an accurate way of answering that question. Success is determined by students emerging from courses with integrated, higher learning skills that they can **demonstrate** to others. Those demonstrations are the proof that they have truly learned.

Another keystone of the theory is the belief that students perform better when they know exactly what is expected of them, including what they will be required to do and how it will be evaluated. What defines an A, B or C paper or project should be public knowledge. This concept of **transparency** is key to using SLO's successfully in the classroom.

The final key concept is **practice**. Before being evaluated on an SLO, students should have the opportunity to practice the skill or tasks that compose it.

### **Practical Experience**

Feeling bewildered by all this? Confused? Skeptical? You're in luck! Many Cabrillo College faculty have actually had some practical experience with this approach to teaching through the Learner Outcomes Summer Institute. Most scoffed in the beginning, but found that this teaching model was useful and that it worked. Their experience shapes the materials you'll find in this workbook.

Beginning in 1999, Cabrillo College began exploring the use of SLOs in the classroom through the Institute. The sixty faculty trained by the institute discovered that this "new" approach to learning was actually something they had been doing all along, but with a few new wrinkles. Every instructor possessed well-defined goals and grading criteria, but many had not put them in writing or taken the step to share them with students. Most Institute faculty found that using SLOs did not necessarily require that they change their approach to teaching, but asked instead that they articulate the one they were already using.

Faculty also found that using this approach resulted in a more streamlined and effective course. Once activities were integrated with outcomes and their assessments, the course became more focused and exciting.

Finally, faculty found that the teaching model did not improve their success and retention rates, the old methods of measuring learning. But successful students seemed to be learning more in depth. Why? If true success is measured by what students can **do** with the material they are learning, rather than what the teacher covers, then the focus shifts to the students. Cabrillo faculty found that students, as always, varied in their willingness and ability to participate in their classroom experiences. However, greatly increased communication resulted from both the key concepts of transparency and practice. Students argued less about their grades because they were aware of the criteria that formed them, and they had a better idea of how to improve. Grading was more consistent and, in some cases, more rigorous.

# **Part 1: Background and Overview**

## Introduction: What Is Assessment And Why Are We Doing It?

### What Is Assessment?

“Assessment is the ongoing process of:

- Establishing clear, measurable expected *outcomes* of student learning.
- Ensuring that students have sufficient *opportunities* to achieve those outcomes.
- Systematically gathering, analyzing, and interpreting *evidence* to determine how well student learning matches our expectations.
- Using the resulting information to understand and *improve* student learning.”

(Linda Suskie, *Assessing Student Learning: A Common Sense Guide*, p. 3.)

### Why do assessment?

“Faculty should be curious to learn how their teaching impacts student learning and, as rational decision-makers, they should want to reflect on evidence, rather than rely on conjecture, to guide decision-making.” (Mary Allen, *Assessing Academic Programs in Higher Education*, p. 13.)

There are three broad reasons for doing outcomes assessment: accountability, accreditation, and improvement.

#### Accountability:

We are teaching courses that fulfill requirements for transfer, occupational programs, and so on. But how do we know if students are really learning what we are teaching? For that matter, how does anyone (a third party) know if our teaching was effective? Recently, there have been calls for accountability in education. (Just as we all want CEOs, public officials, etc. to be accountable.) We should be able to show evidence that our teaching is effective.

#### Accreditation:

For the K-12 educational system, “No Child Left Behind” is a way for schools to be held accountable. However, we would really like to avoid that kind of standardized testing and evaluation of students at the college level, for very good reasons. The Department of Education would like to require standardized testing for accountability in higher education, but the accrediting commissions have been vigorously fighting for a different system, one of peer review. The idea is this: if we faculty define our learning goals and standards and then collect evidence of student learning, we *are* demonstrating accountability in a way that is flexible and non-formulaic. If we as faculty and college staff refuse to participate in the new accreditation requirements, it could mean that eventually we actually would have standardized testing and evaluation that is not of our choosing and that we do not value.

The new accreditation standards are the *alternative* to standardization. There is a great deal of flexibility allowed in meeting the standards. Different colleges can meet the requirements in a variety of ways. This means that each college can design a system that works with the campus culture. However, because it’s so flexible, there is no standardized set of directions for how to actually accomplish what we are asked to do. We can use the experiences of colleges that are further along in the process, in addition to inventing our own processes.



**Improvement:**

The good news about the new standards is that they are considered “best practice” and these methods really do lead to improvement. There is a great deal of research showing the effectiveness of this approach. By shifting our focus to what we teach or cover to what the students are actually learning, we become more effective teachers.

**Accreditation Requires Defining and Assessing Student Learning Outcomes**

From “Introduction to the Accreditation Standards” by ACCJC:

The primary purpose of an ACCJC-accredited institution is to foster learning in its students. An effective institution ensures that its resources and processes support student learning, continuously assesses that learning, and pursues institutional excellence and improvement. An effective institution maintains an ongoing, self-reflective dialogue about its quality and improvement.

Note the emphasis on a “self-reflective dialogue”. It turns out that thinking about the way we’re doing things and talking with each other about what we’re doing and why is healthy and leads to better practices.

The “new” accreditation standards were adopted in 2002. Our self-study report will be written during the 2007-2008 and the accreditation team will visit our school during the following year (2008-2009).

The accreditation standards frequently mention student learning outcomes and assessment. From Standard II, section A, part c: **“The institution identifies student learning outcomes for courses, programs, certificates, and degrees; assesses student achievement of those outcomes; and uses assessment results to make improvements.”**

In addition, other aspects of the institution, such as student services, the library and other learning support services, human resources, physical resources, technology resources, and financial resources are supposed to be regularly evaluated or assessed. The results of the evaluations are to be used as a basis of improvement.

In short, we are defining student learning outcomes and assessing those outcomes because it is required for accreditation. However, the reason behind the requirement is that it is good practice.

## Overview of the Assessment Process

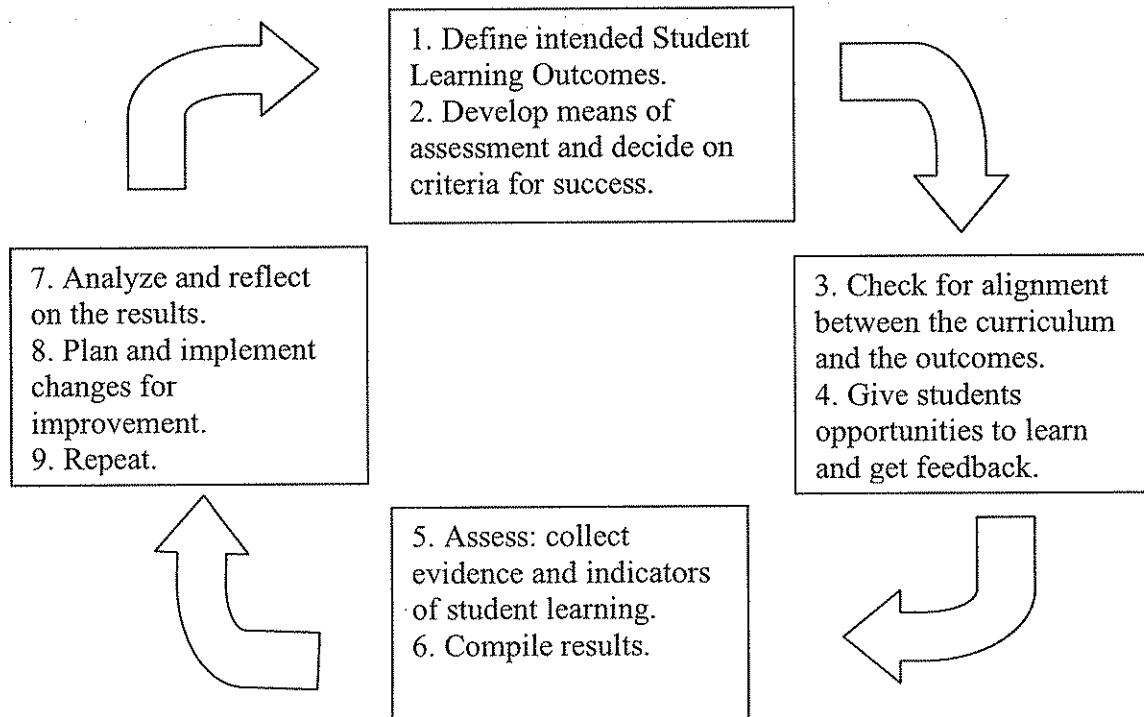
Before describing the individual tasks in detail, it helps to have an overview of what we will be expected to do.

### Steps in the Assessment Cycle

For each area (course, program, degree, certificate, student services unit, etc.), we are required to:

1. Define our expected student learning outcomes (what we would like students to learn from the course/program/etc.).
2. Develop means of assessment and decide on criteria for success.
3. Check for alignment between the curriculum and the outcomes.
4. Give students opportunities to learn.
5. Assess whether or not that learning has occurred.
6. Compile assessment results.
7. Analyze and reflect on the information.
8. Plan and implement changes as a result of what we learned from the assessment. (This is often called “closing the loop”.)
9. Repeat. (This must be an ongoing process throughout the years - not only when we’re preparing for accreditation!)

### The Assessment Cycle



Sometimes, when instructors first hear about assessment, they are under the mistaken impression that we already do assessment when we assign grades to students. It turns out that assessment isn't the same as assigning grades. Grades alone do not give enough information on specific strengths and weaknesses of students or of the class as a whole. For example, if a student gets a B in a class, that B grade doesn't tell us whether the student submitted consistently very good work or if the student did excellent work on some assignments and average work on other assignments. In addition, grading standards might be vague or inconsistent, while assessment information is very specific. Assessment information can tell you what aspects the entire class did well on or things that were difficult for many students. Instead of focusing on how individual students performed, assessment results give us information on what aspects or assignments most students had trouble with, and by using the assessment results for improvement, the instructor can focus on improving the course or the delivery or the assignments so that a greater proportion of students are successful, or so that deeper learning occurs for more students.

Assessment is not meant to identify individual students or individual instructors. It will not be used for faculty evaluation. There is no shame in having disappointing assessment results, as long as you make a plan for improvement and then actually implement the plan. What's important is willingness, curiosity, and honesty. If we focus on questions or goals that are too easy, we're missing the point and missing valuable opportunities for making things better.

## **Part 2: Writing Student Learning Outcomes**

## SLOs versus Course Objectives

Student Learning Outcomes for the classroom describe the knowledge, skills, abilities or attitudes that a student can **demonstrate** by the end of your course.

- Don't think about content or coverage - consider what students should be able to **DO** with what they've learned by the end of the semester.
- How will students **demonstrate** this?
- What can they **produce** to show faculty that they have learned to apply their new knowledge?

When trying to define Student Learning Outcomes for a course, think of the big picture. SLOs:

- Describe the broadest goals for the class, ones that require **higher-level** thinking abilities.
- Require students to **synthesize** many discrete skills or areas of content.
- Ask them to then **produce** something - papers, projects, portfolios, demonstrations, performances, art works, exams etc. – that **applies** what they have learned.
- Require faculty to **evaluate** or **assess** the product to measure a student's achievement or mastery of the outcomes.

Course objectives are on smaller scale, describing small, discrete skills or “nuts and bolts” that require basic thinking skills. They are subsets of outcomes. Think of objectives as the building blocks used to produce whatever is used to demonstrate mastery of an outcome. Objectives can be practiced and assessed individually, but are usually only a portion of an overall project or application.

Objectives	Outcomes
Objectives describe skills, tools or content that a student will master by the end of course.	Outcomes describe over-arching goals that a student will be able to demonstrate by the end of a course.
Objectives require the use of basic thinking skills such as knowledge, comprehension and application.	Outcomes require the use of higher level thinking skills such as analysis, synthesis and evaluation.
Objectives do not necessarily result in a product. Most often, objectives are synthesized or combined to produce something that measures an outcome.	Outcomes result in a product that can be measured and assessed.

The following three pages consist of active verbs from “Bloom’s Taxonomy” that can be used to write either objectives or outcomes. The columns closer to the left on each of the charts represent objectives (simpler skills), while the columns closer to the right represent outcomes (higher-order skills requiring synthesis). These charts were developed by Janet Fulks and Kate Pluta from Bakersfield College. Note that there is a **flow**, a line of progression from the most basic objectives to the most sophisticated outcomes.

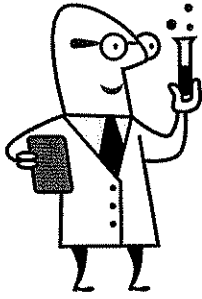


**Cognitive Domain  
(Bloom's Taxonomy)  
Learning Outcomes Related To Knowledge**

Knowledge	Comprehension	Application	Analysis	Synthesis	Evaluation
Student remembers or recognizes information or specifics as communicated with little personal assimilation.	Student grasps the meaning behind the information and interprets, translates, or comprehends the information.	Student uses information to relate and apply it to a new situation with minimal instructor input.	Student discriminates, organizes, and scrutinizes assumptions in an attempt to identify evidence for a conclusion.	Student creatively applies knowledge and analysis to integrate concepts or construct an overall theory.	Student judges or evaluates information based upon standards and criteria, values and opinions.
Cite Label List Enumerate Identify Imitate Match Name Quote Recall Reproduce State Write	Convert Define Describe Discuss Estimate Explain Generalize Identify Illustrate Locate Paraphrase Restate Summarize	Apply Chart Compute Demonstrate Determine Dramatize Establish Make Manipulate Prepare Project Solve Use	Analyze Compare Contrast Correlate Diagram Dissect Differentiate Distinguish Infer Investigate Limit Outline Separate	Assemble Create Construct Design Develop Formulate Generate Hypothesize Initiate Invent Modify Reframe Synthesize	Access Appraise Conclude Critique Decide Defend Diagnose Evaluate Judge Justify Rank Recommend Support

Basic  
Knowledge  
Level

More Sophisticated  
Higher Level Thinking  
Critical Thinking



**Psychomotor Domain**  
**(Bloom's Taxonomy)**  
**Learning Outcomes Related To Skills**

<b>Observe</b>	<b>Model</b>	<b>Recognize Standards</b>	<b>Correct</b>	<b>Apply</b>	<b>Coach</b>
Students translate sensory input into physical tasks or activities.	Students are able to replicate a fundamental skill or task.	Students recognize standards or criteria important to perform a skill or task correctly.	Students use standards to evaluate their own performances and make corrections.	Students apply this skill to real life situations.	Students are able to instruct or train others to perform this skill in other situations.
Hear Identify Observe See Smell Taste Touch Watch  *Usually no outcomes or objectives written at this level.	Attempt Copy Follow Imitate Mimic Model Reenact Repeat Reproduce Show Try	Check Detect Discriminate Differentiate Distinguish Notice Perceive Recognize Select	Adapt Adjust Alter Change Correct Customize Develop Improve Manipulate Modify Practice Revise	Build Compose Construct Create Design Originate Produce	Demonstrate Exhibit Illustrate Instruct Teach Train

Basic Knowledge  
 Basic Skills  
 Level

More Sophisticated Skills  
 Higher Level Abilities  
 Critical Understanding of Performance



**Affective Domain**  
**(Bloom's Taxonomy)**  
 Learning Outcomes Related To Attitudes, Behaviors, and Values

<b>Receiving</b>	<b>Responding</b>	<b>Valuing</b>	<b>Organizing</b>	<b>Characterizing</b>
Students become aware of an attitude, behavior, or value.	Students exhibit a reaction or change as a result of exposure to an attitude, behavior, or value.	Students recognize value and display this through involvement or commitment.	Students determine a new value or behavior as important or a priority.	Students integrate consistent behavior as a naturalized value in spite of discomfort or cost. The value is recognized as a part of the person's character.
Accept Attend Describe Explain Locate Observe Realize Receive Recognize	Behave Comply Cooperate Discuss Examine Follow Model Present Respond Show Studies	Accept Adapt Balance Choose Differentiate Defend Influence Prefer Recognize Seek Value	Adapt Adjust Alter Change Customize Develop Improve Manipulate Modify Practice Revise	Authenticate Characterize Defend Display Embody Habituate Internalize Produce Represent Validate Verify

Elementary Values and Behaviors  
 Inherited Value System  
 Egocentric View

More Highly Developed Attitudes  
 Well Thought-out Value System  
 Higher Level Abilities to Identify and  
 Articulate Others' Values



## Writing Student Learning Outcomes

Student Learning Outcomes (SLOs) describe what a student should be able to DO at the end of a course or program.

- SLOs use action verbs from Bloom's Taxonomy with an emphasis on higher-order thinking skills.
- There should be 3-8 SLOs for each class or program. When in doubt, fewer is better. Between 3 - 5 outcomes is optimal.
- **Course SLOs should be included in course syllabi. Program SLOs should be published on the department's website.**
- SLOs should be the same for all sections of a course. However, each instructor may include on their course syllabi additional outcomes and/or course expectations.
- SLOs should be written in language that students (and those outside the field) are able to understand.
- SLOs are typically not content-specific.
- SLOs should focus on big-picture, overarching concepts, skills, or attitudes.
- SLOs ask students to apply what they have learned.
- SLOs must be assessable and should suggest or imply an assessment. If they do include the method of assessment, it should not be too specific - a given SLO for a course should be appropriate for anyone teaching the course.
- Avoid starting SLOs with the words such as "understand", "learn", "know", etc. since these indicate internal mental processes for the students. (It might be possible to use words like this if the assessment method is indicated in the SLO.) Focus instead on what students will be able to do, produce, or demonstrate.
- Ideally, each course or program should include SLOs from more than one domain (cognitive, psychomotor, and affective).
- When writing SLOs, think about how you will assess each one.
- It is acceptable for different courses to have some of the same SLOs. Since outcomes should be very broad, this is sometimes appropriate. However, objectives will be different for different courses.

## Sample Student Learning Outcomes

Here are sample outcomes developed by Cabrillo faculty for course outlines. Note the verbs used and how they reflect higher level thinking skills, thus making them SLOs rather than objectives.

CEM 151 Construction Fundamentals: Principles and Practices

1. **Construct** a building applying the skills and knowledge obtained in this class.

ANTHRO 13 Forensic Anthropology

1. Using the basic principles of forensic anthropology, **analyze** skeletonized human remains to determine sex, age at death, height and genetic ancestry.

ATH 15HH Preseason Intercollegiate Water Polo - Men

1. **Analyze and customize** principles of cardiovascular fitness, muscular strength, endurance, and flexibility to water polo, and **apply** them to prevent injury.

DANCE 58 Street Dance and Hip Hop

1. **Perform**, with an increasing degree of proficiency, simple Hip Hop movements, **demonstrating** increasing control of skills pertaining to memorization, physical safety, body awareness, alignment, and aesthetic valuing.

CIS 103 Technical Support and Trouble Shooting

1. **Analyze** symptoms of host configuration errors.
2. **Solve** novel hardware and software problems.
3. **Create** technical documentation for user training.

CABT 131 Microsoft Word

1. **Analyze** communication requirements and **produce** professional-quality business documents, including letters, memoranda, and multi-page reports, using intermediate and advanced features of Microsoft Word.

JOUR 53 – Newspaper Production and Copy Editing

- Construct** visually attractive and readable newspaper pages by: 1. Using knowledge of effective design to fit graphical and text elements on newspaper pages and resolve problems with space constraints 2. Critiquing newspaper pages for design principles and design quality

Theatre Art (a series of courses)

TA 7 – Intro to Acting

- Select, analyze, and perform** selections from dramatic texts **utilizing** the performance skills of memorization, vocal projection, spatial awareness, stage directions and physical expression.

10A – Beginning Acting

**Select, analyze, and perform** selections from dramatic texts **demonstrating increasing control** over the skills of memorization, vocal projection, spatial awareness, stage directions and physical expression.

10B – Intermediate Acting

**Select, analyze, and perform** selections from dramatic texts **demonstrating consistent control** and use of the performance consistent skills of memorization, vocal projection, spatial awareness, stage directions and physical expression.

10C – Advanced Acting

**Select, analyze, and perform** selections from dramatic texts **demonstrating a mastery** of the performance skills of memorization, vocal projection, spatial awareness, stage directions and physical expression.

English Composition series

255 – Basic Writing

1. **Write** paragraphs and short essays **demonstrating** basic sentence-level competency and culminating in a portfolio. 2. **Comment** on ideas and writing strategies in reading assignments.

100- Elements of Writing

1. **Write essays demonstrating** sustained clarity of intention, awareness of audience, and various writing techniques. 2. **Articulate** responses to readings in various genres.

1A – College Composition

1. **Write essays**, including research-based writing, **demonstrating** academic rhetorical strategies and documentation. 2. **Analyze** and evaluate assigned and researched texts.

1B – Composition and Literature

1. **Write literary analysis**, interpretation, and research-based essays. 2. **Demonstrate** close readings of literary texts for analysis and interpretation.

2 – Critical Thinking

1. **Write evidence-based essays demonstrating** logical reasoning and argumentative skills. 2. **Evaluate** logical reasoning and argument in assigned and researched texts.

## **Sample Student Learning Outcomes written by Laney College instructors**

### **Anthropology 3: Introduction to Cultural Anthropology**

1. **Describe** the diversity of cultures in the world as well as cultural universals.
2. **Apply** holistic analysis to social phenomena.
3. **Use** a holistic perspective to **teach** others about a culture other than their own.
4. **Analyze** the relationship between the individual and the social group.
5. **Display** appreciation for the value of different cultures and awareness of what we learn from them.
6. **Discuss** the dynamic nature of culture and processes of culture change.

### **Graphic Arts 20 – Production Art and Design Studio**

1. **Demonstrate** fundamental sketching techniques and abilities.
2. **Create** visual sketches of a variety of fundamental graphic imaging techniques.
3. **Utilize** standard situational sequential problem solving techniques in developing creative graphic designs.
4. **Prepare** professional quality presentation art.
5. **Deliver** a verbal presentation of prepared design solutions to a group.
6. **Produce** a high quality student portfolio for design projects.

### **Journalism 55 - Introduction to Journalism**

1. **Write** a news story in the proper inverted pyramid format.
2. **Write** a headline that conforms to standard newspaper specifications with proper verb tense and voice.
3. **Design** a front page for a tabloid size newspaper.
4. **Write** a feature story that conforms to AP newspaper style and is appropriate for a daily newspaper.
5. **Explain** the basics of media law and use these principles when writing newspaper articles.

### **Spanish 30A - Beginning Conversational Spanish**

1. **Recognize** the Spanish sound system.
2. **Converse** with others in Spanish.
3. **Recognize** and **use** basic Spanish grammar and common expressions.
4. **Respond** appropriately to questions in Spanish.

## **Labor Studies 12 - Collective Bargaining**

1. **Apply** collective bargaining theories from both management and labor perspectives.
2. **Analyze** and **apply** the principles of collective bargaining and labor law during negotiations.
3. **Utilize** negotiation skills in labor and employer relations.

## **ESL Grammar 1 and 2**

1. **Demonstrate** correct basic grammar usage in controlled situations, in both oral and written communication.
2. **Recognize** and **correct** basic grammar errors in simple sentences.
3. **Understand** and **follow** oral and written directions. Also **demonstrate** basic aural comprehension by responding appropriately to spoken questions, statements and prompts.
4. **Function** as a productive member of a group by cooperating in interactive learning tasks.
5. **Develop** sound test-taking strategies and study skills.
6. **Demonstrate** responsibility for their own learning by seeking help from teachers and other students.

## **Media 131 - Nonlinear Editing for the Broadcast Media: Final Cut Pro II**

1. **Organize** and **produce** an editing project from conception to final output to videotape, disk, or the Web.
2. **Demonstrate** proficiency in Final Cut Pro 5 basic editing and special effects techniques.
3. **Generate** animated titles using LiveType.
4. **Demonstrate** an understanding of editing aesthetics and the conventions underlying current industry practice, as evidenced by their final project.

## **Math 251 - Arithmetic**

1. **Perform** basic arithmetic operations.
2. **Determine** and **interpret** percents.
3. **Convert** units of measurement using proportions.
4. **Solve** introductory linear equations.
5. **Solve** application problems using formulas.

## **Math 203 - Intermediate Algebra**

1. **Solve** algebraic equations and inequalities.
2. **Examine** and **interpret** the graphs of algebraic functions.
3. **Solve** systems of equations.
4. **Solve** application problems using algebraic functions.
5. **Use** modeling graphs to **interpret** and **make predictions** about real-world functions.

## Chemistry 1A/1B – General College Chemistry

1. **Solve** quantitative chemistry problems and **demonstrate** reasoning clearly and completely. **Integrate** multiple ideas in the problem solving process. **Check** results to make sure they are physically reasonable.
2. Clearly **explain** qualitative chemical concepts and trends.
3. **Describe, explain, and model** chemical and physical processes at the molecular level in order to explain macroscopic properties.
4. **Perform** laboratory techniques correctly using appropriate safety procedures.
5. **Analyze** the results of laboratory experiments, **evaluate** sources of error, **synthesize** this information, and **express** it clearly in written laboratory reports.
6. **Maintain** a laboratory notebook according to standard scientific guidelines.
7. **Design, construct, and interpret** graphs accurately.

## Physics Department (all courses)

1. **Explain** and **discuss** both verbally and in written language the physics concepts listed in course content, as well as their relevance to everyday events and circumstances in a broad interdisciplinary context.
2. Use algebra, trigonometry, and calculus to **set up** mathematical descriptions of physical systems and to **calculate** measurable quantities that provide an understanding of the physical environment in terms of the concepts listed in the course content.
3. **Set up** laboratory equipment safely and efficiently, **plan** and **carry out** experimental procedures, **identify** possible sources of error, **implement** techniques that enhance precision, **reduce** and **interpret** data, and **report** verbally and in written language the experimental data, results, and assessment of reliability.

## Machine Technology 1

1. **Demonstrate** basic shop safety and safe attitudes in all class activities.
2. **Analyze** engineering drawings and blueprints to **determine** part feature's size, location, tolerance, and relationships.
3. Use precision measuring tools to **manufacture** and **inspect** parts to required specifications.
4. **Calculate** proper speeds and feeds based on machine operation, conditions, materials, and tooling.
5. **Determine** dimensions necessary to perform secondary operations such as threading, counterboring, countersinking, and tapping through calculation and use of research materials.
6. **Develop** a plan of operations to **manufacture** required parts to specification using the drill press, lathe, and vertical mill.
7. **Demonstrate** the safe setup and operation of the drill press, lathe, and vertical mill in a manner that efficiently produces the required part to the necessary specifications.

## Writing Student Learning Outcomes Worksheet

Course Name and Number \_\_\_\_\_

<b>Outcome</b> One sentence that describes a major piece of knowledge, skill, ability or attitude that students can demonstrate by the end of the course	<b>Assessment</b> Major assignment, project or test used to demonstrate or apply outcome

<p style="text-align: center;"><b>Outcome</b></p> <p>One sentence that describes a major piece of knowledge, skill, ability or attitude that students can demonstrate by the end of the course</p>	<p style="text-align: center;"><b>Assessment</b></p> <p>Major assignment, project or test used to demonstrate or apply outcome</p>



## Checklist for Writing Student Learning Outcomes

Now that you've written your SLOs, it's best to show them to other faculty in both your discipline and outside it to see if what you've written is understandable and concise. Use the following checklist:

1. Have you used action verbs in describing your SLOs?
2. Are your SLOs written as outcomes rather than objectives?
  - Language indicates the BIG PICTURE rather than nuts and bolts
  - Describes what students can DO
  - Asks students to apply what they've learned by producing something
  - Addresses student competency rather than content coverage
  - Focuses on higher-order skills (analysis, synthesis, and evaluation rather than knowledge comprehension)
3. Is the SLO appropriate for the course?
  - Represents a fundamental result of the course
  - Aligns with other courses in a sequence, if applicable
  - Represents collegiate level work

# **Part 3: Aligning Course Activities with Student Learning Outcomes**

## Overview

Now that you've defined your SLOs for a class, it's time to look at what actually goes on in your classroom. Your SLOs have determined the **destination** of your course; they describe where the student will arrive by the end of the semester. This portion of the workbook helps you **plan the route** they will take to get there. It focuses on three aspects of classroom planning:

- Aligning Activities with Outcomes
- Working with Different Learning Styles
- Using Learner-centered Teaching Techniques

Cabrillo College faculty have found that the methods described here are key factors in making SLOs a success in the classroom. These methods have helped them to focus and streamline their courses, teach to different learning styles and make sure that student learning is at the center of the class. Three other good resources are:

*Learner-Centered Assessment on College Campuses: Shifting the Focus from Teaching to Learning* by Mary Huba and Jann Freed

*Effective Grading: A Tool for Learning and Assessment* by Barbara Walvoord and Virginia Anderson

*Classroom Assessment Techniques* by T. Angelo and K. Cross.

All of these books include a bevy of information about the hard research that confirms the experience of Cabrillo faculty – these techniques work!

## Aligning Activities with Outcomes

### Step One: Skeleton Building

The first step in aligning your class activities with outcomes is to look at the scope of the entire semester. Now that you've articulated your outcomes or ultimate goals, you can turn your attention to the following questions:

- What are the major assignments that measure your outcomes?
- Where do they come during the semester?
- How do you build toward them?
- What specific class activities and homework assignments help students to successfully complete your major assignments?

Use **Course Alignment Worksheet I** to plot where the major assignments that measure your outcomes are placed during the semester. Think of this as the skeleton of your class. At this point, **write down only where the major assignments come in the time frame of the semester.**

As you work, remember that you are focusing on what students will **DO**, not necessarily what must be covered. Doing presupposes knowing, so of course time must be spent helping students to assimilate new knowledge. But using this approach, the organizing principle of your class is based on what students actually do and how they apply or demonstrate that knowledge, ultimately leading to mastery of the course outcomes. Start your planning with your major assignments.

## Course Alignment Worksheet I

Course
Outcome
1.
2.
3.
4.
5.
Assignment that measures it
Week
1.
2.
3.
4.
5.
6.
7.
8.
9.

10.

11.

12.

13.

14.

15.

16.

17.

### **Skeleton Checklist**

Look again at your course skeleton:

- Is what you've planned **feasible** for both you and your students in terms of workload and grading? How many major assignments do you have? Will students have enough time to produce them? Will you have enough time to grade them?
- Do your major assignments match your outcomes? Do they provide students with an opportunity to demonstrate their mastery of the course outcomes?
- Though it is difficult, check once again to make sure that the skeleton you've created is focused on the assignments, rather than the content covered.

## **Step Two: Assignment Evaluation**

The next step is to carefully consider how your major assignments help students to demonstrate the skills or outcomes you are seeking. It helps if you take the time to articulate and define the skills that each major assignment demands. It is important to ask:

- Do my assignments reflect the kind of learning I most desire and the kind that matches my outcomes? What are the precise skills that students will need to learn to complete these assignments?
  
- Do my assignments require that student demonstrate the kinds of skills I am actually grading?

This step asks you to analyze your assignments to make sure they are in alignment with your outcomes. Fill out the **Assignment Evaluation Worksheet** for each of your major assignments in your class. Each time, you will be making a list of what students need to learn for that particular assignment. Cabrillo College faculty have found it illuminating to examine papers or projects to define what precisely they were hoping the assignment would demonstrate. This work also helped them to develop clearer grading criteria for the assignment, but that comes later! For now, use the worksheets to analyze the skills students will need to learn for each of your major assignments.

## Assignment Evaluation Worksheet

Course	
Assignment (Describe briefly)	
SLOs Assignment Addresses (list)	
Major Skills Required (Be specific! What do students need to learn to complete this assignment?)	



### **Step Three: Assignment Skills to Class Activities To Outcomes**

The final step is to go back to your course skeleton and plot out how you will use class time, homework assignments, readings and other activities to teach students the skills your assignment requires and to allow them to practice them before the assignment is graded.

This concept of “practice” is one of the key principles to using SLOs successfully. This teaching model strongly asserts that students must practice the skills they are being evaluated on before that evaluation occurs. Again, the emphasis is on what they can do with what they are learning rather than the knowledge itself. Giving them the base knowledge or exposure to the ideas and content of the course without allowing them time to do something with it before they are evaluated on it will not lead to successful mastery of your course outcomes.

Use **Course Alignment Worksheet II** to describe the skills students need to learn in each week of the course to be able to complete your major assignments. Next to those skills, list the activities, exercises, homework assignments, readings, exercises etc. that will allow the students to learn the content the skill requires and to practice it.

Be brave! Be willing to let go of favorite class activities or readings that don't actually contribute to the skills required and ultimately to the class outcomes. Be creative! Allow yourself to invent other activities that focus on the skills needed. You may find that certain activities actually contribute to mastery of your outcomes, though you weren't aware of it. Others may need to be cut.

Remember that students will need good exposure to the content of your course in order to apply it in an assignment. But once again, place application at the center of your planning rather than focusing on coverage. Coverage is necessary, but if there's only time for covering content and not applying it, how do you know that learning is actually taking place? Perhaps you need to rethink how you are using class time and how students are first exposed to the content so that there is ample opportunity for skill demonstration and application. The section of this workbook on Learner-Centered Teaching may give you some ideas.

## Course Alignment Worksheet II

Course:

Week	Skills	Exercises, Activities, Assignments
1		
2		
3		
4		

Week	Skills	Exercises, Activities, Assignments
5		
6		
7		
8		

<b>Week</b>	<b>Skills</b>	<b>Exercises, Activities, Assignments</b>
9		
10		
11		
12		

Week	Skills	Exercises, Activities, Assignments
13		
14		
15		
16		
17		

## Working with Different Learning Styles

Now that you have a plan for your class, based on your outcomes and assignments, it's time to look at your teaching methods. Do your methods encourage all students to learn? How well do you work with students of differing learning styles?

Every instructor knows that students learn differently – all it takes is a look around the classroom. Students simply don't all absorb material in the same way. Yet, Learner Outcomes Institute faculty found, after analyzing their classroom practices, that they tended to teach to only one particular learning style, and it usually matched their own. Becoming aware of this allowed faculty to create new methods of instructional delivery designed to reach all students.

This portion of the workbook is designed to help you:

- Identify your own learning style
- Analyze your teaching methods in respect to learning style
- Design new activities or methods of delivery that will reach all learning styles

## Step One: Identifying Your Learning Style

There are several methods or theories that describe student learning styles. Though they may call the various types different names and base their classification systems on contrasting research, all agree that learning style can be divided into several broad categories and these affect how students learn. Several on-line sites describe their approach to the subject and provide a quick test or questionnaire that will identify the user's learning style.

Use one of the sites listed below to identify your own learning style, its strengths, weaknesses and preferences and read the site material on how that style learns best. Then familiarize yourself with the other learning styles listed. Use the **Identifying Learning Style Worksheet** to gather information.

1. Keirsey Temperament Sorter:  
[www.advisorteam.com/temperament\\_sorter.register.asp](http://www.advisorteam.com/temperament_sorter.register.asp)
2. Index of Learning Styles:  
[www.ncsu.edu/felder-public/ILSdir/styles.htm](http://www.ncsu.edu/felder-public/ILSdir/styles.htm)
3. Learning Style Survey for College:  
[www.metamath.com/mutliple/multiple\\_choice\\_questions.cgi](http://www.metamath.com/mutliple/multiple_choice_questions.cgi)
4. Support For Learning:  
This marvelous site includes many different learning styles tests and resources for faculty to analyze them.  
[www.support4learning.org.uk/education/lstyles.htm](http://www.support4learning.org.uk/education/lstyles.htm)

## Identifying Learning Styles Worksheet

<b>My Learning Style</b> (list name)	
Key Characteristics (list several important traits)	
Best Learning Methods (list preferred learning activities)	
<b>Other Learning Style</b>	
Key Characteristics	
Best Learning Methods	
<b>Other Learning Style</b>	
Key Characteristics	
Best Learning Methods	



<b>Other Learning Style</b>	
Key Characteristics	
Best Learning Methods	
<b>Other Learning Style</b>	
Key Characteristics	
Best Learning Methods	

## **Step Two: Analyzing Your Teaching Methods**

Now it's time to take a look at your teaching methods. Are they primarily directed at one learning style? Some Cabrillo faculty have been surprised and shocked to find how frequently they teach to only one learning style. Most have found that after analyzing their own preferences, it was easy to add activities or assignments that reached other learning styles. Students enjoyed the variety and, much to the instructor's delight, deeper learning took place for all.

To analyze your teaching methods, revisit **Course Alignment Worksheet II**. In the margins, identify which learning styles are targeted by each activity on the sheet. Take an inventory of the types of activities you are planning. Over the course of the semester, do you have a balance of activities for all learning styles? Do you provide alternative methods for some assignments so that all learning styles are given an opportunity to succeed?

### **Step Three: Designing New Activities**

You can easily design new class activities or assignments to balance the learning style emphasis in your class by using the information on the **Identifying Learning Styles** worksheet. Take a careful look at the best learning methods for each learning style. Then decide if any of the activities on your **Course Alignment Worksheet II** can be changed so that they work for a different learning style. Record your changes on the **Revised Course Alignment Worksheet**.

## Revised Course Alignment Worksheet

Course:

Week	Skills	Exercises, Activities, Assignments
1		
2		
3		
4		

Week	Skills	Exercises, Activities, Assignments
5		
6.		
7		
8		

<b>Week</b>	<b>Skills</b>	<b>Exercises, Activities, Assignments</b>
9		
10		
11		
12		

Week	Skills	Exercises, Activities, Assignments
13		
14		
15		
16		
17		

## Learner-Centered Teaching

Now that you've organized your course with respect to scheduling assignments and teaching to different learning styles, it's time to look at them through one last lens: how learner-centered is your class?

What is the focus in your classroom? Do students spend most of their time listening to you lecture, give perspectives on an issue or relate important content information? Or do they spend it on activities that require them to interact and grapple with what is being taught? Is there a balance between the two? What lies at the center of the hours that you and your students spend together? What is actually going on?

This portion of the workbook will:

- Explain some of the theory behind learner-centered teaching
- Help you to analyze your own approach



## Learner-Centered Teaching: The Theory

The theorists behind the SLO teaching model believe that we need to make a change in how we think about classroom instruction. Some have gone so far as to call it a “paradigm shift.” The shift asks faculty to define their role in a different way. We should no longer think of ourselves as primarily imparters of information whose job is to pour knowledge into the empty heads of passive students. Rather, our role should be to facilitate student interaction with the material, providing the information but stepping aside from a starring role and becoming more of a supporting player. Students should be at the center of the course, interactively working with the knowledge that they are being taught.

The debate on this theory has been fierce. The SLO theorists support their beliefs with research which shows that students learn critical thinking and higher-order reasoning from interactive activities in the classroom rather than lecturing. This “active learning” has been shown to result in greater and more long-lasting information retention and skill-building. Students seem to be able to do more with what they’ve learned.

On the other hand, those who question this approach to education point out that students can’t do anything with material until they have learned basic concepts, facts or vocabulary in a field of study. Furthermore, in order to facilitate an orderly sequence of learning and, in community colleges, to help students transfer, certain areas must be covered before a student can move on. How in the world can a hard working instructor cover the necessary basics and still have time in class for all this interactive learning?

Faculty at Cabrillo College’s Summer Learner Outcomes Institutes have joined the debate and conducted their own experiments using a learner-centered approach. For most, this meant examining how they were using class time. A helpful way to think about this issue, as presented in *Effective Grading A Tool for Learning and Assessment* by Barbara Walvoord and Virginia Anderson, is to consider when it is best for students to **first** be exposed to new concepts and information. In the traditional way of teaching, this is done through lecture in class. Active learning asks students to do the first exposure at home. The figure below, from *Effective Grading*, demonstrates the approach.

	<b>Lecture based Teaching</b>	<b>Interactive Teaching</b>
Class time	<b>First exposure</b> (Student first hears or observes facts, ideas, processes not encountered before)	<b>Process</b> (student applies, analyzes, argues, solves problems using first exposure material)
Student Study time	<b>Process</b>	<b>First Exposure</b>

“That’s all very nice,” you might argue, “but my students won’t often read the material assigned for homework or they won’t understand it when they do.”

Cabrillo College faculty have found that asking students to do first exposure at home means that they must create some sort of inducement or good reason for students to make the effort. Faculty have:

- Given quizzes
- Assigned short writings
- Required students to answer a short set of questions that must be turned in at the beginning of each class.

Designing some sort of activity that counted toward the final grade resulted in students doing the work. Then, class time was spent processing the information or solving problems (note the emphasis on student activity), with the instructor available to help, but not to lead.

Faculty graded this preparatory work, but didn't spend much time on it. They didn't respond with the kind of detail they would use for a major assignment or project. Instead a small number of points were awarded, work was either passed or not passed or given a check plus, check or check minus grade.

This approach can work for large classes as well. Some instructors have begun to use class time for problem solving, rather than lecture. When lectures are necessary, faculty are aware of the research that states that after 10-20 minutes of continuous lecture, the ability to assimilate and understand the material greatly decreases. The following techniques can be used to help students retain lecture information:

- After 7-10 minutes, stopping to ask rhetorical questions which are answered in student notebooks.
- Surveying the class ("Raise your hand if you agree or disagree or have encountered an example?")
- Turn to your partner and (share examples or repeat back just learned information)
- Guided lecture (students listen for 15-20 minutes without taking notes, then spend 5 minutes recording all they can remember. They then work in groups to reconstruct the lecture conceptually, teaching it to each other)
- Immediate Mastery Quiz (a quiz is given at the end of each lecture. The Seattle Community College district has done research that shows that learners retain almost twice as much material when a quiz is included at the end of the period)

At the end of this section is a list of other resources for making large classes interactive.

Finally, a word of warning. Cabrillo faculty have found that some students do not respond positively to an active learning approach. They are comfortable with sitting back and passively receiving material. They want their instructors to be like television: entertaining, mildly interesting and asking nothing more of them than to watch. A learner-centered approach to teaching demands much more from students and makes learning more of their responsibility. Some students had difficulty in changing their role in the classroom.

## Sources for Active Learning

The sources listed below appear in Wolvoord and Anderson's *Effective Grading*.

### Resource 4.2.

#### **Sources for Interactive Teaching and Learning.**

Bean, 1996. Integrating writing, critical thinking, and active learning.

Bonwell and Eison, 1991. Strategies for active learning.

Brown and Ellison, 1995. Single chapter overview, with specific examples of faculty using active learning.

Halpern and Associates, 1994. Part one contains six articles on instructional strategies that promote active learning.

Meyers and Jones, 1993. Strategies for active learning.

### Resource 4.3

#### **Sources for Making Large Classes Interactive.**

Bonwell and Eison, 1991. Summary of research about learning in large classes and suggestions for making them interactive. (See pp. 14-19.)

Gibbs and Jenkins (eds.), 1992. Teaching large classes in higher education: how to maintain quality with reduced resources. Theoretical issues, case studies, and institutional support for change.

Tobias, 1994. Reports how a chemistry professor improved students' pass rate in large classes.

Walvoord and Williams, 1995. Video for faculty shows how five faculty from various disciplines are making large classes interactive.

Weimer (ed.), 1987. Collection of essays on teaching large classes.

Electronic discussion group to share ideas about large classes. To join, send the following email message [SUBSCRIBE LCIG-L first name last name] to [LISTSERV@UGA.CC.UGA.EDU].

## Analyzing Your Teaching

A quick way to get a sense of your approach to teaching is to once again return to the **Revised Course Alignment Worksheet**. Look over your list of activities and exercises. How are you using class time? How much is used for first exposure to course materials? How much first exposure occurs out of class?

In the margins, note where first exposure occurs each week of the semester.

If you find that most of your class time is devoted to first exposure, is it possible to redesign the course so more processing can occur in class? What kinds of carrots can you create so that students will be rewarded for completing first exposure on their own time (and penalized if they don't do it)? Can you design any class activities so that students have more opportunity to problem solve, analyze, argue or apply course content?

If you are willing to experiment, revise that **Course Alignment Worksheet** one last time to alter where exposure first occurs and to design new class activities that allow students to process materials. Use the **Revised Course Alignment Worksheet** to record your ideas.

## **Part 4: Assessing Student Mastery of Student Learning Outcomes**

## Assessment Methods

“Good assessments:

- Give us *useful* information.
- Give us *reasonably accurate, truthful* information.
- Are *fair* to all students.
- Are *ethical* and protect the privacy and dignity of those involved.
- Are *systematized*.
- Are *cost effective*, yielding value that justifies the time and expense we put into them.”

(Linda Suskie, *Assessing Student Learning: A Common Sense Guide*, p. 18.)

Start with your stated student learning outcomes (SLOs), and decide on appropriate assessment methods for each.

The assessment methods chosen should include both **direct and indirect evidence**. Direct methods should be relied on the most, and these should be supplemented by indirect evidence. The methods chosen should be **cost-effective**. Most importantly, the assessments we choose should give us **useful** information that can be used for improvement.

**Direct Assessment Methods:** (these involve evaluating students’ actual performance)

- Standardized tests
- Tests or specific test questions that faculty write – these can be used to assess certain questions that apply to stated SLOs
- Embedded assignments (term papers, projects, lab reports, other assignments)
- Performance evaluations
- Portfolios (a collection of the student’s work over time)

**Indirect Assessment Methods:** (these explore indicators of student learning, and can provide information about attitudes, values, and the like. These are not guarantees of student learning, but indicators that they have probably learned. These methods are also useful for finding out why students did or didn’t learn and for coming up with ideas for possible improvements/changes.)

- Surveys
- Focus groups
- Interviews
- Reflective essays/writing samples

An assessment method that can and should be used in any classroom: **embedded assignments** graded using a rubric or primary trait analysis.

Keep in mind that we’re not expected to assess every outcome every semester! That would be too much to do at once. Each department should decide on an assessment plan in which all outcomes are eventually assessed. Maybe one or two outcomes could be assessed each semester for each class. It’s also important that we “close the loop” – that we use the results for

improvement. That's the whole point of assessment! (The accreditation team will be looking for this.)

For information, advice, pros, and cons of each type of assessment method, see the following sources:

Allen, Mary J. *Assessing Academic Programs in Higher Education*. Bolton: Anker, 2004. Chapter 5 covers direct assessment techniques, and Chapter 6 covers indirect assessment techniques.

Suskie, Linda. *Assessing Student Learning: A Common Sense Guide*. Bolton: Anker, 2004. See Part III, Chapters 7-13.

Both of these books are available in the Laney College Library. They are highly recommended.

## Using Rubrics - Overview

How can you tell if students in your course have achieved mastery of your student learning outcomes? That's easy. You simply grade the assignments that measure the outcomes. However, you may need to grade differently than you have been doing. This teaching model believes that students will perform better if they understand how they will be graded **in advance**. They need to know the precise standards and criteria that make up an A, B or C grade.

"But, my students know that already," you perhaps protest. "We talk about it on the first day of class. The percentages that make up their final grade are right in my syllabus. And I use a grading sheet when I return work."

Many Cabrillo College faculty at the Summer Learner Outcomes Institute began the session certain that they were perfectly clear with students about grading. Sure, they had some complaints over the years, but that was to be expected. Yet, when asked if they told their classes exactly what elements composed an A paper, project or major assignment, most admitted that they had not gone into it in that kind of detail. The good news is that once they did, through developing a **grading rubric**, they found that students were much less confused. Students seemed to have a better grasp of what they needed to do to successfully complete an assignment. More importantly, once the assignments were graded using the rubric, students understood the marks they earned. Complaints about grades were greatly reduced!

A **rubric** translates the standards and criteria that make up grading into some sort of chart or description. Rubrics can be used to score many kinds of written assignments or exams, papers, projects, speeches or portfolios. They are not useful, however, as a grading mechanism for multiple choice or short answer tests. However, you can analyze those kinds of assessments by looking at groups of questions to also determine how well students are mastering your outcomes.

A rubric answers the question, "What precisely is an A on a particular assignment or project? How is it different from a B or C?" While this is information that many of us carry inside our heads, in order to clearly assess student learning outcomes, it must be articulated in writing. However, it is up to you – the expert in your classroom – to define these standards and criteria and how they will be applied to the class work that you assign. Your rubric will be as individual as your grading style and pedagogy.

This portion of the workbook is designed to help you create grading rubrics for the major assignments that measure your SLOs. After you have created a rubric, it's helpful to share it with another faculty member in your discipline (or better yet, in a different discipline) to check if:

- The wording is understandable to a student or novice (watch for an excess of discipline-specific jargon).
- The progression of criteria for each level is logical and consistent.



## Introduction to Rubrics

A rubric is a very flexible grading tool that can be used to clarify your expectations, make grading more efficient, promote student learning, and assess student learning. Rubrics are especially useful for grading complex, subjective assignments that don't have just one "right" answer, such as papers, reports, and performances.

Rubrics include a list of dimensions or aspects of the assignment (such as "organization", "argumentation", "creativity", "use of color", "depth of analysis", etc.). For each dimension, there is a description of the highest level of achievement. This represents what the student should be aiming for. In addition, there are descriptions of the lower levels of achievement for each dimension. A rubric is typically given to the students ahead of time, before they turn in their assignments. Ideally, it is given to them at the time the assignment is made.

Rubrics can and should be used to make your expectations clear to your students. Rubrics can also be used to collect assessment results for accreditation and for analysis and improvement of your class or program.

## Why use Rubrics?

Here are some compelling reasons for using rubrics in our classes:

- Rubrics make our expectations clear to students, so they can focus their time and energy on the aspects of the assignment that are most important. The characteristics of excellent work are spelled out for the students (without giving away any answers), so students know what they should be striving to perform on the assignment.
- When your expectations and grading criteria are clearly provided for students, there are far fewer arguments about grades ("She got an A but I only got a B. Why? I don't understand. It's not fair!")
- Rubrics save grading time. When grading with a rubric, simply circle the appropriate description for each aspect of the assignment instead of making lengthy comments on each student's paper. If you know of a common type of error or a comment that you frequently write on student papers, include it on the rubric. When students make that mistake, just circle the item on the rubric.
- Using a rubric allows you to grade consistently. This is especially helpful if more than one person is grading the assignment. However, even if you're the only person grading the assignment, it helps you be more consistent, since your grading standards are right there in front of you.
- Since using a rubric can allow you to grade assignments faster, students get feedback sooner, and can then make adjustments and corrections as soon as possible. Students can get the most out of feedback if it is given soon after they complete the assignment.

- Rubrics provide an efficient way of conveying useful feedback to students. When their assignments are returned and they look over the completed rubric, they have a clear sense of where their strengths and weaknesses are. Since the description of the highest performance level is also on the rubric, they also have an idea of what they need to do to improve.
- Rubrics can help students evaluate their work and that of others. By comparing their work to the performance standards of the rubric, students can learn to recognize and produce quality work.
- Rubrics can be used to help us refine our teaching skills. When you use a rubric to grade assignments, you can easily make photocopies of the completed rubrics before returning them to students. One can then tally how the class did overall on each dimension of the assignment. A look at the tally can tell you the strong and weak points of the entire class. This information can be used to modify or improve the class. What should you be spending more time or effort on? The results of the tally give you evidence for what is working well and what could be improved. The next time you teach this class, you can grade the same assignment again and see if there's any change in class results as a result of the changes/improvements you made. Surprise! You are performing assessment and "closing the loop".
- Rubrics can be used for assessment. By tallying how a class (or students in a program) performed on different aspects of the assignment, it becomes clear where the problem areas are. This information can be used to improve or make changes to an individual class or to an entire program. You can track how students perform on particular aspects over several semesters to gauge the effects of teaching modifications and improvements.
- Rubrics are very flexible and can be created to suit any assignment or situation. However, rubrics do take some time to create. Some examples of rubrics are shown here. There are also online tools to help make it easier for you. After you have developed a rubric for a particular assignment, you can easily use it in subsequent semesters with little if any modifications. Once you create a rubric, the work is mostly done. Also, if you have similar kinds of assignments, once you make one rubric you can modify it slightly to fit other assignments.

## Sample Rubrics

A rubric is an individual as an instructor, the assignment or the course. They can be organized and presented in many different ways. Before designing your own, it's helpful to look at rubrics developed by other teachers in different disciplines. Some of these rubrics were created by Laney College faculty, and others were created by Cabrillo faculty at the Learner Outcomes Summer Institute. All of these sample rubrics have been successfully used by the instructors. Take a look at all the different ways you can organize and present your grading criteria to students.

Note the sample grading sheet that is tied to an English 1A rubric. Students receive both the rubric and grading sheet before attempting the assignment. The sheet is used to summarize how well the students did on each aspect of the grading rubric. It also articulates what they need to do to improve their grade in the future.

Institute faculty who used rubrics combined with grading sheets for the first time reported that they spent less overall time grading.

## Sample Rubric - Writing Assignment Grading Chart

Name \_\_\_\_\_ Date \_\_\_\_\_ Topic \_\_\_\_\_

### Assignment:

- 1) Find a **current article** that discusses **sustainability issues** and **food availability**.
- 2) Find two other references to increase your knowledge of the issue. Use these to help explain what the article is about.
  - a. These references must be reliable sources, journals, other articles, books.
  - b. Website references must be verified by another source, therefore, 2 websites with count as 1 reference
- 3) Write about 5 pages **discussing the article** using your new knowledge of the topic.

**Follow these guidelines to ensure a good grade. Be sure to turn in this page with your paper.**

Points	5 – Great!	4 – Good	3 – Okay	2 – Not okay	0
<b>Relevance Current Article</b>	Article from past few weeks & relevant to class	From a few months ago	From previous year	Article over a year old	Not about a relevant topic
<b>Background References*</b>	At least two references with supportive data tied in	Two random references not used to explain	One reference that supports article	One reference only	No other references
<b>Paragraph Structure</b>	Thesis statement first, followed supporting information	Good thesis statement, new data presented mid-way	Weak thesis statement, no concluded sentence	No thesis statement, no concluded sentence	No thesis statement, no flow of sentences
<b>Summary of Information</b>	Presented: Issue discussed, background info on topic, relevant, suggestions	Missing one of the previous items	Missing two of the previous items	Missing three of the previous items	Missing all of the previous items
<b>Overall Presentation</b>	Good flow of sentences and between paragraphs. Easy to read	Paragraph structure good with no flow between them	No structure to paragraph, but sentence structure okay	No paragraph or sentence structure. No misspellings	No paragraph or sentence structure, misspellings
<b>Followed directions</b>	5 pages, no more than 12 pt font, double spaced, references cited	Missing one of the previous items	Missing two of the previous items	Missing three of the previous items	Not a discussion of the article

\* 2 websites = 1 reference!!

### Overall Point Total

Total Points \_\_\_\_\_/30

### Comments:

Rubric created by Amy Bohorquez, Biology Department, Laney College

## Sample Rubric – Lab Notebook Grading Chart

Name \_\_\_\_\_ Date \_\_\_\_\_ Topic \_\_\_\_\_

Points	5 – Great!	4 – Good	3 – Okay	2 – Not okay	0
<b>Completeness</b>	All labs completed as assigned	Missing 1-2 labs	Missing half the labs	Missing over half the labs	Missing majority of the labs
<b>Goals for each lab</b>	Goals for each lab in your own words	Goals copied from the book Some individual	Goals copied from book only	A few goals per lab	No goals at all
<b>Diagrams &amp; Figures</b>	Includes ones that relate to topic beginning covered in class	Has most of the figures, but not all of the important ones	Half diagrams & figures included	Only a few each lab	No diagrams
<b>Activities and Explanations</b>	Concise, complete explanation & descriptions	Some activities labeled & explained	Activities labeled w/out explanations	A few activities written down	No Notes or activities written down
<b>Computer Labs</b>	All Computer labs activities; explanations of why it's important	All Computer labs activities with little explanation	Half the computer lab activities completed	One or two activities completed per lab	No activities listed for computer labs
<b>Overall Presentation</b>	Complete, well organized, great notebook to review material	Complete, lacking organization, adequate notebook for review	Partially completed, partially organized	Lacking qualities for review	Not great notebook

### Other needed information (need to have for full points!)

- Table of contents with all labs up to date
- Grades page with updated scores and totals

### Overall Point Total

- 1) Total Points \_\_\_\_\_/30
- 2) Total Points \_\_\_\_\_/30
- 3) Total Points \_\_\_\_\_/30
- 4) Total Points \_\_\_\_\_/30

### Comments:

Rubric created by Amy Bohorquez, Biology Department, Laney College

## Sample Rubric - Psychology 1A Assignment

	Beginning 1	Developing 2	Accomplished 3	Exemplary 4	Score
Discuss how understanding of intelligence changed after reading textbook and exploring Gardner's model (use own words)	Student unable to demonstrate understanding of intelligence according to textbook or Gardner's model	Student begins to explore understanding of intelligence according to textbook and Gardner's model but relies heavily on quotations from text and/or website	Student demonstrates an understanding of intelligence according to textbook and Gardner's model but misses a few key points	Student demonstrates an understanding of intelligence according to textbook and Gardner's model and is able to express provide a detailed analysis of the material	
Discuss Gardner's definition of intelligence and how it is different or similar to the textbook	Student does not provide Gardner's definition of intelligence or compare it to the text material	Student able to provide a rudimentary definition of intelligence but does not compare it to the text material	Student provides a detailed definition of intelligence and provides a rudimentary comparison to the text	Student provides a detailed definition of intelligence and provides a detailed comparison between Gardner's model and the text	
Discuss how using Gardner's model of intelligence would affect education at any level (student must use self as a reference point and compare and contrast when possible)	Student only describes Gardner's model and is unable to relate how it would affect education on any level or student unable to use self as a reference point and compare and contrast models of education	Student discusses how model would affect education in general but unable to use self as a reference point or compare and contrast models of education	Student discusses how model would affect education and uses self as reference point and begins to compare and contrast education models	Student discusses how model would affect education, uses self as model and details how educational models are different	
Discuss the usefulness of multiple intelligences, both personally and for their target society	Student unable to identify usefulness of multiple intelligence	Student identifies usefulness of multiple intelligence but unable to see its benefit to self/larger society	Student identifies the usefulness of multiple intelligence and begins to explore its usefulness to self/larger society	Student identifies the usefulness of multiple intelligence and details how it is useful to self/larger society	
Describe TWO ways you are smart according to MI inventory and how it shows in your behavior	Student either identifies no ways or only one way he/she is smart and does not address personal behavior	Student identifies two ways he/she is smart but does not address personal behavior	Student identifies two ways he/she is smart and begins to explore personal behavior	Student identifies two ways he/she is smart and details how this is demonstrated in personal behavior	
Include a copy of MI results with essay	Student does not include results	n/a	n/a	Student includes results	

Rubric created by Karolyn van Putten, Psychology Department, Laney College

## Sample Rubric - Psychology 1A Assignment

	Beginning 1	Developing 2	Accomplished 3	Exemplary 4	Score
Describe the research question that will be answered by the proposed experiment	Student describes the experiment but does not identify what question will be answered	Student describes the experiment and demonstrates superficial knowledge of what questions will be answered by the experiment	Student describes the experiment and demonstrates a working knowledge of what questions will be answered by the experiment	Student describes the experiment and demonstrates advanced knowledge of what questions will be answered by the experiment and explores the implications of the experiment	
Describe what you are asked to believe or accept about the proposed experiment	Student unable to describe what he/she is being asked to believe/accept and only describes why he/she would not believe experiment	Student identifies what he/she is being asked to believe in a tertiary manner	Student identifies what he/she is being asked to believe and offers a brief discussion	Student identifies what he/she is being asked to believe and offers an engaging discussion	
Describe the evidence provided to support assertions	Student unable to describe evidence or assertions	Student able to describe assertions but not evidence to support them	Student able to describe evidence and assertions briefly	Student able to describe evidence and assertions in detail	
Is there an alternative way to interpret evidence, if so, how	Student unable to describe an alternate interpretation	Student able to identify alternate interpretation but unable to describe how it could be used	Student able to identify and describe alternate interpretation briefly	Student able to identify and describe alternative interpretation and discuss in detail	
Describe reasonable conclusions	Student unable to identify a reasonable conclusion	Student describes on reasonable conclusion briefly	Student able to describe two reasonable conclusions	Student able to describe two or more reasonable conclusions and discuss implications	
Explain how experiment is designed (in own words)	Student unable to explain experiment design	Student explains design of experiment but quotes article	Student explains design of experiment briefly in own words	Student provides a detailed description of the design of the experiment in own words	

Rubric created by Karolyn van Putten, Psychology Department, Laney College

## Sample Rubric for Assessing Photographs

### 1. Concept, idea, visualization:

- 10 pts Shows coherency of the concept with a high degree of originality and sophistication. The idea is well stated with visual elements and cues.
- 9 pts Shows coherency of the concept with some originality and sophistication. The idea is stated with visual elements and cues but needs to be more clear or more strongly evident.
- 8 pts Shows some coherency of the concept with commonly used, cliché or stereotyped imagery. The idea is obtuse, and requires greater clarity through the use of visual elements and cues.
- 7 pts Lacks general coherency of the concept. Many of the visual elements and cues do not lead the viewer to the intended idea.
- 6 pts Lacks any coherency of the concept. Visual elements and cues do not lead the viewer to the intended idea.
- 0 pts The work was not presented to me.

### 2. Composition & design:

- 10 pts Shows strong internal integrity of the visual elements. Nothing needs to be added or removed – framing is superb.
- 9 pts Shows internal integrity of the visual elements. A visual element needs to be added, moved or removed – framing needs some slight adjustment.
- 8 pts Shows obvious weaknesses in the internal integrity of the visual elements. Many visual elements need to be added, moved or removed – framing needs definite adjustments.
- 7 pts Image is breaking apart – there is very little internal integrity of the visual elements. Most visual elements need to be rethought – framing needs major readjustment.
- 6 pts Visual integrity is nonexistent and image has broken apart. All of the visual elements need to be rethought – framing needs a complete overhaul.
- 0 pts The work was not presented to me.

### 3. Technical:

- 10 pts Shows master in the use of photographic equipment and techniques to attain the assignment parameters.
- 9 pts Shows a good command of the use of photographic equipment and techniques to attain most of the assignment parameters.
- 8 pts Shows some command of the use of photographic equipment and techniques to attain some of the assignment parameters.
- 7 pts Shows limited command of the use of photographic equipment and techniques to attain a few of the assignment parameters.
- 6 pts Shows little or no command of the use of photographic equipment and techniques to attain a few or none of the assignment parameters.
- 0 pts The work was not presented to me.



## **Sample Rubric for Oceanography 10 Lab Project**

### **Bathymetric Map and Cross Section (Lab #2) Grading Criteria**

#### **An “A” grade (9 or 10 out of 10):**

- The contour lines are extremely smooth and evenly spaced with none of them touching each other.
- Every water depth # has the appropriate contour line next to it and the entire map is “contoured”.
- The overall presentation is excellent.
- The cross section is accurate and complete and the bottoms of the canyons and top of the ridge are not flat.
- The ends of the cross section are complete and the paper shows the vertical exaggeration.

#### **A “B” grade (8 out of 10):**

- The contour lines are neat and smooth and appropriately spaced and some are touching, but very few.
- Nearly all the water depth #'s are contoured, some may be missing, but very few.
- The overall presentation is good and very few “shadows” are showing.
- The cross section is accurate, but some information is missing, particularly on the ends.
- Vertical exaggeration may or may not be shown.

#### **A “C” grade (6 or 7 out of 10):**

- The contour lines are a little wide and show fringes, some may have double ends and some of them are obviously touching each other.
- Some of the water depth #'s may not be contoured and the contour lines are all not evenly or properly spaced. There may be shadows on the map and the overall presentation is slightly sloppy.
- The cross section is mostly accurate, but some information is off line and missing, particularly on the ends.
- Vertical exaggeration may not be shown.

#### **A “D” and “F” grade (5 or less out of 10):**

- The contour lines are sloppy and inaccurate and some or many are touching each other.
- Several of the water depth #'s are not accurately contoured and the map is not complete.
- The overall presentation is below or far below average.
- The cross section is inaccurate, and much information is off line and missing.
- Vertical exaggeration may be shown.

Developed by Dave Schwartz, Geology, Cabrillo College.

## English 1A Essay Rubric

### **WOW!!! (90-100 Points - Grade A)**

Begins with an introduction that shows your understanding of the issues, grabs your readers' attention, and presents a strong and insightful thesis or point of view.

Engages the topic in a thoughtful and individual way, showing originality, elegance and clear thinking.

Develops the topic using a strong detail, quotes from other sources, and a unique synthesis of ideas.

Utilizes library research and quotes from outside sources, always properly citing them using the MLA format.

Possesses a fully explained and logical progression of ideas that indicates the writer's sensitivity to different ways of looking at the topic with an awareness of key counter arguments and a consideration of how those alternate positions shape your understanding of the topic.

Ends with a strong conclusion that clarifies the significance of the paper's lessons

Chooses words aptly and sometimes inventively.

Demonstrates mastery of most of the grammar and usage conventions of Standard English.

Uses phrasing, tone, and expression that reflects a unique personal voice.

### **Good! Almost There (80-89 Points - Grade B)**

Begins with an introduction that shows some understanding of the issues, gives some background and has an adequate thesis or point of view.

Presents a thoughtful response to the topic, using appropriate reasoning and a partially realized analysis that is accurate.

Develops the topic showing appropriate details, a sense of orderly progress between ideas, and use of references that reveal a familiarity with the topic.

Uses words precisely if not creatively.

Varies sentence structure enough to read smoothly.

Utilizes library research and quotes from outside sources, usually properly citing them using the MLA format.

Uses competently the conventions of written English, containing few, if any, errors in sentence structure, punctuation and capitalization or usage.

Uses mostly consistent phrasing, tone and expression that reflects a personal world view and style.

### **Getting there (70-79 Points - Grade C)**

Presents an adequate response to the topic, using superficial analysis and weak point of view.

Uses logical reasoning, but the supporting evidence is general and imprecise with few examples. There may be some small factual errors.

Uses a less precise vocabulary and may contain awkwardness of expression.

Utilizes library research and quotes from outside sources, with fairly consistent use of the MLA citation format. May make some errors.

Contains minor errors in mechanics and usage, and perhaps one or two more distracting errors in sentence structure.

Uses fairly consistent phrasing, tone and expression that reflect a personal world view and style with occasional inconsistencies.

### **Try Again (60-69 Points - Grade D)**

Responds to the topic illogically, without a coherent structure or focus.

Has no point of view, uses mostly summary and lacks evidence and support.

Makes several large, factual errors.

Makes enough errors in usage and sentence structure to cause a reader serious, if occasional, distraction.

Improperly uses the MLA format for citations. Makes major errors in quoting and uses few sources.

Uses frequently inconsistent phrasing, tone and expression, often formulaic and imitative; lacks evidence of a personal worldview and style.

### **Let's not even go there (50-59 Points - Grade F)**

Doesn't attempt the task or distorts it

Lacks organization or detail.

Contains many distracting errors in sentence structure, simplistic or inaccurate word choice, many repeated errors in grammar and usage.

Not enough is written to get a sense of personal worldview and style.

# English 1A Grading Sheet

## Paper #1-7 Grading Sheet

Name: \_\_\_\_\_ Total Grade: \_\_\_\_\_

This paper is one of the pieces of evidence for Outcomes #3 and 4:

- **Write essays**, including research-based writing, **demonstrating** academic rhetorical strategies and documentation.
- **Analyze** and evaluate assigned and researched texts.

Based on the grading scale listed under Grading Requirements, your grade is divided into the elements listed in the chart below.

Elements of Grade	Wow!	Good	Getting There	Try Again	Let's Not Go There
Introduction					
Thesis or Claim					
Response to Topic					
Evidence to support thesis					
MLA citation and documentation					
Awareness of counter arguments					
Flow and order of Ideas					
Conclusion					
Word Choice					
Grammar and Punctuation					
Personal Voice					

Grammar/Writing Issues  
Last Paper:

Grammar/Writing Issues  
This Paper:

Comments:

## Sample Rubric - Chemistry 1A/1B Pre-laboratory Assignment

### 3 (Excellent)

- Purpose and Overview section clearly states the purpose of the lab and what will be determined during the experiment
- Explains in general terms how it will be determined (what experimental techniques will be used and the sequence of events)
- Purpose and Overview includes the balanced equation for any chemical reactions.
- The purpose and overview section does not include experimental steps. It gives the reader a good overall idea of the point of the experiment and how it will be accomplished.
- The prelab questions (if any) are done correctly and are clearly explained and/or labeled.
- The procedure outline is a summary of the procedural steps but does not include too much detail.
- The data table is complete, labeled thoroughly, and organized in a clear and logical way.
- The writing style is clear and understandable and there is a logical progression of ideas.

### 2.5 (Good)

One item described above is omitted or not done correctly, or minor mistakes are made in answering the prelab questions.

### 2 (Adequate)

Two items described above are omitted or not done correctly, or mistakes are made in answering the prelab questions.

1.5 (Needs Work) Several omissions and/or mistakes are made.

1 – 0.5 (Unacceptable) Incomplete prelab

0 No prelab or prelab not submitted before the lab period begins

### Missing Items:

- Purpose and Overview section does not clearly state the purpose of the lab and what will be determined during the experiment
- Purpose and Overview section does not explain in general terms how it will be determined (what experimental techniques will be used and the sequence of events)
- Balanced equation(s) is/are missing
- Purpose and Overview section is too detailed and/or lists experimental steps
- Purpose and Overview is not clear or understandable
- There isn't a logical progression of ideas in the Purpose and Overview
- Missing or incomplete procedure section
- Too much detail in the procedure section
- Missing or incomplete data table
- Missing, incomplete, or incorrect prelab questions (if applicable)

## Sample Grading Rubric for Expt. 10, Chem 1B – Titration Curve

\_\_\_\_\_ (3 points) **Prelab** (already assigned)

\_\_\_\_\_ (4 points) **Graph construction and interpretation:** titration curve and close-up graphs

Excellent – no errors or omissions (4)	Good – one minor error or omission (3 - 3.5)	OK – more than minor errors but correct general idea (2 - 2.5)	Needs work – serious errors (1 - 1.5)	Unacceptable – incomplete or missing (1 - 0)
--	--	--	---------------------------------------	--

- Descriptive title
- Axes labeled with quantities and units
- Graph takes up whole page
- Axes are chosen so that points are spread out on the page
- 1, 2, 5 rule followed
- Best straight or curved lines through data
- Estimating values from graphs

\_\_\_\_\_ (6 points) **Calculations:** should be clear, logical, and labeled completely

Excellent – no errors (6)	Good – very minor errors or correct but unclear (5.5 - 5)	OK – more than minor errors but correct general idea (4.5 - 3.5)	Needs work – serious errors (3 - 2)	Unacceptable – incomplete calculations (1.5 - 0)
---------------------------	---	--	-------------------------------------	--

- $K_a$  of acid
- Concentration of solution
- Molar mass of acid
- Calculate pH at beginning of titration
- Calculate pH at  $\frac{1}{4}$  and  $\frac{3}{4}$  point
- Calculate pH at equivalence point
- Calculate pH at 120%
- Compare calculated pH's to pH's on graph.
- Which points agree better than others and why?

\_\_\_\_\_ (3 points) **Evaluation of Results** - sources of error

(3) **Excellent:**

- Thoughtful, deep explanation of likely sources of experimental and systematic error.
- The explanation is clear and easy to understand.
- It includes the most obvious sources of error, and a few other less obvious sources.
- For each source of error, there is an analysis of how it would affect the final results – would each error make the calculated result higher or lower than its true value?
- The analysis is correct.

(2) **OK:** Explanation of errors shows evidence of careful thought but there is no analysis of how it would affect the final results. OR: an obvious source of error not mentioned.

(1) **Needs work:** Errors are mentioned but not explored completely.

\_\_\_\_\_ **Total (out of 16)**

Rubric Created by Cheli Fossum, Chemistry Department, Laney College

## Sample Lab Grading Rubric for Experiment 17, Chem 1B

### Prelab:

- 5 (Excellent)**
- Purpose and Overview section clearly states the purpose of the lab and what will be determined during the experiment
  - Explains in general terms how it will be determined (what experimental techniques will be used and the sequence of events)
  - Purpose and Overview includes the balanced equation for any chemical reactions.
  - The purpose and overview section does not include experimental steps. It gives the reader a good overall idea of the point of the experiment and how it will be accomplished.
  - The prelab questions are done correctly and are clearly explained and/or labeled.
  - The procedure outline is a summary of the procedural steps but does not include too much detail.
  - The data table is complete, labeled thoroughly, and organized in a clear and logical way.
  - The writing style is clear and understandable and there is a logical progression of ideas.
- 4 (Good)** One item described in "5" is omitted or not done correctly, or minor mistakes are made in answering the prelab questions.
- 3 (OK)** Two items described in "5" are omitted or not done correctly, or mistakes are made in answering the prelab questions.
- 2 (Needs Work)** Several omissions and/or mistakes are made.
- 1 (Unacceptable)** Incomplete prelab
- 0** No prelab or prelab not submitted before the lab period begins

### Missing Items:

- Purpose and Overview section does not clearly state the purpose of the lab and what will be determined during the experiment
- Purpose and Overview section does not explain in general terms how it will be determined (what experimental techniques will be used and the sequence of events)
- Balanced equation(s) is/are missing
- Purpose and Overview section is too detailed and/or lists experimental steps
- Purpose and Overview is not clear or understandable
- There isn't a logical progression of ideas in the Purpose and Overview
- Missing or incomplete procedure section
- Too much detail in the procedure section
- Missing or incomplete data table
- Missing, incomplete, or incorrect prelab questions (if applicable)

### Graph Construction and Interpretation:

- 5 (Excellent)**
- Graph has a descriptive title
  - The axes are labeled clearly with numbers and units
  - The axes are chosen to spread out the points on the page
  - The axes follow the 1, 2, 5 rule (each division = 1 or 2 or 5 or 0.1 or 0.2 or 0.5 or 10 or 20 or 50 etc. so that it is very easy to estimate between the lines on the graph)
  - The plotted points are shown
  - The best straight line is drawn
  - Values of chosen points are estimated correctly from the graph
- 4 (Good)** One of the items listed in "5" is missing or not done correctly.
- 3 (OK)** Two of the items listed in "5" are missing or not done correctly.
- 2 (Needs work)** Three of the items listed in "5" are missing or not done correctly.
- 1 (Unacceptable)** Four of the items listed in "5" are missing or not done correctly.
- 0** No graph

### Data Collection and Observations:

- 3 (Good) All data is included and labeled clearly. All experimental observations are included.  
2 (Adequate) Some observations are missing  
1 (Needs work) Data is missing  
0 (Unacceptable) No data or observations are included

### Calculations:

- 8 (Excellent) All calculations are clear, logical, and labeled completely. There are no calculation errors or significant figure errors.
- Calculation of concentration of tetraborate in each sample
  - Calculation of  $[\text{Na}^+]$
  - Calculation of K
  - Table of  $\ln K$  and  $1/T$  values
  - Calculation of slope of graph (done by hand, not obtained from computer)
  - Calculation of  $\Delta H^\circ$
  - Calculation of y-intercept (done by hand, not obtained from computer)
  - Calculation of  $\Delta S^\circ$
- 7 (Very good) Calculations are clear and logical but there are errors in the number of significant figures reported.
- 6 (OK) One mistake in calculations, or calculations are unclear
- 5-3 (Needs work) Calculations are unclear or messy. Mistakes made in calculations.
- 2 (Unacceptable) Calculations contain several mistakes.
- 1 (Unacceptable) Errors in every part of the calculations
- 0 Calculations not done

### Experimental Results – Accuracy and Precision:

- 3 (Good) Results agree with accepted values.
- 2 (OK) There is some scatter in the data points on the graph, but the final results are acceptable.
- 1 (Needs work) Results are very far from accepted values. There is evidence of poor lab technique.

### Evaluation of Results:

- 5 (Excellent)
- Thoughtful, deep explanation of likely sources of experimental and systematic error.
  - The explanation is clear and easy to understand.
  - It includes the most obvious sources of error, and a few other less obvious sources.
  - For each source of error, there is an analysis of how it would affect the final results – would each error make the calculated result higher or lower than its true value?
  - The analysis is correct.
- 4 (Good) Errors are discussed and discussion shows evidence of careful thought, but one important error is missing.
- 3 (OK) Errors are discussed but not clearly or specifically enough, or there is no analysis of how each error would affect the final results.
- 2 (Needs work) Errors are briefly mentioned but not explored completely. Some obvious sources of error not discussed.
- 1 (Unacceptable) Some errors are mentioned, but not many. There is no attempt at analysis.
- 0 Evaluation is missing.



### Questions:

- 5 (Excellent)**
- All questions involving calculations are done correctly
  - Calculations are labeled clearly
  - Calculations are easy to understand
  - Calculations have correct answers with the correct number of significant figures.
  - All questions involving explanations are explained clearly and completely.
- 4 (Good)** There are minor mistakes (but not many) in calculations or significant figures. Some of the written explanations could be more complete or clear, but all explanations are basically correct.
- 3 (OK)** Some mistakes in calculations, some incorrect answers on the questions requiring explanations, but generally more answers are correct than incorrect.
- 2 (Needs work)** More answers incorrect than correct
- 1 (Unacceptable)** An attempt was made to answer the questions but there were lots of mistakes
- 0** Questions were omitted

### Overall Format, Clarity, and Neatness:

- 5 (Excellent)** Especially neat and clear, very easy to understand
- The lab report contains all sections in the correct order.
  - It is easy to read (lettering/printing) and has a logical organization.
  - There is enough empty space between things so that all information is clear and readable.
  - Data tables are neat.
  - Everything is labeled completely.
  - The reader does not have to struggle to understand your work and logic
- 4 (Good)** Report is missing one of the traits mentioned in "5" but is still easily readable and understandable.
- 3.5 (OK)** Mostly clear and understandable but parts take some effort to follow
- 2 (Needs work)** Report is not arranged logically. Printing is messy. Sections are hard to locate. Information is cramped and requires effort to decipher. Organization detracts from clarity.
- 1-0 (Unacceptable)** Extremely messy and hard to understand.

**Overall Score:** (raw score/39 points) × 30 points possible = Score out of 30 points

## How to construct a rubric

1. Decide on a manageable number of important dimensions of the assignment. (For example: organization, clarity, grammar/mechanics, depth of analysis, creativity, etc.)
2. For each dimension, define “exemplary” performance. Be as specific as possible.
3. Decide how many performance levels you would like to include. Decide on the labels for each performance level. Examples:
  - Excellent, competent, needs work (3 levels)
  - Exemplary, competent, developing (3 levels)
  - Accomplished, proficient, developing, beginning (4 levels)
  - Distinguished, proficient, intermediate, novice (4 levels)
  - Well done, satisfactory, needs work, incomplete (4 levels)
  - Excellent, good, adequate, needs work, incomplete (5 levels)
4. Define the remaining performance levels (“good”, “adequate”, “needs work”, etc.) for each dimension. Be as specific as possible.
5. Assign points for each category. Make sure that the number of points assigned corresponds to the appropriate grade according to your grading scale. Each dimension can be weighted differently, since there may be some aspects of the assignment that are more important than others.

If using a rubric seems too formulaic to you, it’s possible to build some flexibility into the rubric. If creativity or extra effort is important to you, just include it as one of the dimensions of the rubric and weight it accordingly.

## Rubric Scoring and translation to grades

Care must be taken in determining a score or grade from a rubric to ensure that the score students receive corresponds to the grade they should get. For example, if you use a 4-point scale for your rubric dimensions,

4 = A

3 = B

2 = C

1 = D

0 = F

(this is similar to the GPA scale)

However, this doesn’t translate to the usual scores for determining grades.

The typical overall percentages for grades are as follows (and yours might be a little different than this):

90-100% = A  
80-89% = B  
70-79% = C  
60-69% = D  
below 60% = F

For example, if a student got a 2 on every rubric dimension (the equivalent of a C), if you determine the percentage based on points, the student would get 50% ( $2 \text{ obtained} \div 4 \text{ possible} = 0.5$  or 50%). This would mean that the student receives the equivalent of an F on the assignment!

To come up with appropriate scoring, you can either:

A. Re-interpret your rubric scores using a “rubric converter”, available at <http://www.rubricconverter.com> for a charge.

Or:

B. Define the number of points for each trait on the rubric so that the points work out to the correct grade.

If, for example, you want to use a 4-category scale for your rubric, and if the categories are approximately equal to A, B, C, and D,

- You could set the A to 100% and give it a 4 out of 4.
- B could be set at 85% or 80%:  $4 \times 0.85 = 3.4$  points, or  $4 \times 0.8 = 3.2$  points (you might choose 3.5 points, which translates to 87.5%)
- C could be set at 75% or 70%:  $4 \times 0.75 = 3$  points, or  $4 \times 0.7 = 2.8$  points (you might choose 3 points, which is 75%.)
- D could be 65% or 60%:  $4 \times 0.65 = 2.6$  points, or  $4 \times 0.6 = 2.4$  points. (2.5 points would correspond to 62.5%)
- F could be anything within a wide range. (0-2 points)

You might have a three-point or five-point scale instead. No matter what grading scale or weighting you use, it's possible to set up the rubric so that the number of points earned matches the appropriate grade. For each category and each dimension, just make sure the number of points you're assigning makes sense. Calculate the percentage for each (points earned divided by points possible  $\times 100$ ) and make sure it's consistent with what you want and your grading scale.

If you would like some help on this, contact Cheli Fossum at [mfossum@peralta.edu](mailto:mfossum@peralta.edu) or 464-3272.

## Defining Rubric Components

The following worksheets may help you create your rubric. The first step in designing a rubric is to define **the elements or components** that compose the assignment that will be grading. What are the types of things you are looking for? What elements go into determining a student's grade? Use the Rubric Component Worksheet to articulate the particulars of the assignment. If you're not sure how to begin, look over the sample rubrics once more to see how other instructors defined their rubric components. (Use of this worksheet is completely optional. If you'd rather go about it in a different way, please do!)

### Rubric Component Worksheet

<b>Assignment</b>	
<b>Assignment Components</b>	
1.	2.
3.	4.
5.	6.
7.	8.

## Describing Levels of Success

Use the worksheets to articulate your standards for each component in each grade level.

<b>Score: A</b> Write a sentence that describes the component at this level. Be as specific as possible.	
Component 1:	
Component 2:	
Component 3:	
Component 4:	
Component 5:	
Component 6:	
Component 7:	
Component 8:	

Score: **B**

Write a sentence that describes the component at this level. Be as specific as possible.

Component 1:

Component 2:

Component 3:

Component 4:

Component 5:

Component 6:

Component 7:

Component 8:

Score: **C**

Write a sentence that describes the component at this level. Be as specific as possible.

Component 1:

Component 2:

Component 3:

Component 4:

Component 5:

Component 6:

Component 7:

Component 8:

Score: **D**

Write a sentence that describes the component at this level. Be as specific as possible.

Component 1:

Component 2:

Component 3:

Component 4:

Component 5:

Component 6:

Component 7:

Component 8:



Score: **F**

Write a sentence that describes the component at this level. Be as specific as possible.

Component 1:

Component 2:

Component 3:

Component 4:

Component 5:

Component 6:

Component 7:

Component 8:

## Making A Rubric Document

As the sample rubrics demonstrated, there are many ways to assemble the standards and criteria you have just articulated into some kind of document that you can show students. A chart works well for rubrics with only a few components, such as the one created by Amy Bohorquez for essays in her Biology class. A rubric with many components may need to be written out in detail, like the English 1A one. There is not just one “right” way to do this. You must find the method and shape that best fits your style and topic. The key issue, however, is **clarity**. You want your rubric to be easily understood by your students.

Once you have put together your rubric, try to find other faculty who you can show it to. See if it makes sense to them. It helps to ask faculty outside your discipline, because perhaps they will be novices in the subject area, just like your students at the beginning of your course. If faculty in other disciplines can understand your rubric, hopefully your students will be able to as well.

Once you actually start using your rubric in your classes, you may find that you need to modify it. There may be areas that are unclear or need more delineation. You may not have included an element that you find is very important. Consider your rubric a work in progress and expect it to change over time.

## How to use a rubric to collect assessment information

1. Hand out the rubric to your students along with the assignment. Discuss in class how it will be used.
2. When students turn in their completed work, grade it using the rubric. Circle appropriate items on the rubric when grading, add comments if necessary, and add up the points.
3. Make photocopies of the completed rubrics.
4. Staple the completed rubric to the assignment and return the work to students.
5. For each component/dimension/primary trait (organization, analysis, voice, content, etc.), tally the number of students in each performance category. (For example, how many students had “excellent” organization? How many had “good” organization? How many had organization that “needs work”?)
6. Analyze the results. Were there any dimensions/primary traits that had low overall scores? Focus your improvement efforts on those aspects. (What could you do differently in class? More explanation of that aspect? A clearer handout explaining that aspect? An additional assignment that specifically focuses on that aspect? More practice? More feedback? Providing a model?)
7. Report on your results and the improvements made as a result of the assessment.

## Resources - Rubrics

More information on rubrics can be found in the following books. All of them are highly recommended and are available in the Laney College Library.

Huba, Mary E. and Jann E. Freed. *Learner-Centered Assessment on College Campuses: Shifting the Focus from Teaching to Learning*. Needham Heights: Allyn & Bacon, 2000.  
Rubrics are covered in Chapter 6.

Stevens, Dannelle and Antonia Levi. *Introduction to Rubrics*. Sterling: Stylus, 2005. (The entire book is useful. It shows the step-by-step creation of a rubric in Chapters 1 and 3.)

Suskie, Linda. *Assessing Student Learning: A Common Sense Guide*. Bolton: Anker, 2004.  
Rubrics are covered in Chapter 7.

Walvoord, Barbara and Virginia Johnson Anderson. *Effective Grading: A Tool for Learning and Assessment*. San Francisco: Jossey-Bass, 1998. Chapter 5 covers "primary trait analysis". This is the same thing that we do when we define our standards for a rubric. Appendix C shows many examples of different rubrics. (In the book, they are referred to as "primary trait-based scales".)

**Helpful online resources:** (collected by Dr. Karolyn van Putten)

<http://www.rubricconverter.com>  
Converts rubric scores to grades.

<http://rubistar.4teachers.org/index.php>  
This website creates rubrics of various types for you! It is definitely worth a look.

<http://gsi.berkeley.edu/resources/grading/introduction.html>  
Contains very useful information on grading and rubrics.

<http://www.middleweb.com/CSLB2rubric.html>

<http://www.teachervision.fen.com/teaching-methods/rubrics/4521.html>

[http://edweb.sdsu.edu/triton/july/rubrics/Rubric\\_Guidelines.html](http://edweb.sdsu.edu/triton/july/rubrics/Rubric_Guidelines.html)

[http://edweb.sdsu.edu/triton/july/Rubrics/Rubric\\_Template.html](http://edweb.sdsu.edu/triton/july/Rubrics/Rubric_Template.html)

[http://www.teach-nology.com/web\\_tools/rubrics/](http://www.teach-nology.com/web_tools/rubrics/)

<http://www.bridgew.edu/AssessmentGuidebook/>

<http://pareoline.net/getvn.asp?v=7&n=3>

<http://school.discovery.com/schrockguide/assess.html>

## **Part 5: Program Outcomes and Assessment**

## Program Outcomes

The accreditation standards require that we determine student learning outcomes for any degrees and certificates that we offer. Here are the steps to follow to determine the outcomes for your program.

1. Define your program. Does your department offer a degree or certificate? If so, that's your program. If not, think of a sequence of classes that students usually take and assume that is your program. You may have more than one program for your department.

(Example: There isn't a chemistry degree or certificate at Laney. We decided to focus on a sequence of courses: One year of general chemistry and one year of organic chemistry (Chem 1A, 1B, 12A, 12B). This is the sequence of classes taken by chemistry majors, biology majors, pre-medicine, pre-dental, and pre-pharmacy students. We later realized that we had another program: the Chemistry 30A/30B sequence, taken by pre-nursing students.)

2. Meet as a department and brainstorm to come up with outcomes for your program. What should students be able to DO after completing the program? See Ruth Stiehl, The Outcomes Primer, pp. 57-59 for a good approach.

3. Check for alignment of the courses with the program. For each program outcome, note which class addresses that outcome. If some outcomes are not addressed in any of the classes, you might consider modifying one or more courses so that they do address the missing outcome(s). (You might do this if you feel that the outcome in question is very important.) Alternatively, you could consider modifying the outcome to something more reasonable or doable.

4. Check for alignment of the course outcomes and the program outcomes. Each course should probably have at least one outcome in common with the overall program outcomes. They do not have to be worded identically.

5. Plan how and when you will assess each program outcome. Plan to assess each outcome cyclically. For example, you might assess one program outcome next semester and two the following semester, etc. Each outcome should be assessed within a two-year or three-year cycle.

After collecting assessment results, analyze them, discuss them, and use them in the department as a basis for improvement. Document the results and the corresponding improvements using the outcomes and assessment reporting forms, and submit the forms electronically to the Learning Assessment Committee. Include this information in your program review.

## Process for Determining Program Outcomes

Used in a workshop given by Ruth Stiehl at Laney and Merritt Colleges, Fall 2005

1. Gather materials: post-it notes, pens and markers, tape, flip charts or large pieces of paper to post on the wall. Post the large paper on the wall. Each participant gets a stack of post-it notes and a pen.
2. You will need most of your department members. If your department is very small, people outside of your department could also participate. This process will work best if you have at least three people in your working group.
3. The question: What should students be able to DO after completing the program? Sometimes it helps to imagine what skills you want them to take with them out into the world.
4. Brainstorm: Each group member should write ideas/responses (to “what should students be able to **do** after completing the program?”) on post-it notes, one idea per post-it. Start each statement with an action verb. Post the notes on the wall-mounted paper in any order. Get as many ideas out as possible, and don’t censor anything. For this part, work in silence, and don’t discuss any of the responses yet. This part should take 15-25 minutes. Keep going until you can’t think of any more ideas.
5. Rearrange the post-its to group similar or related ideas together. Work as a group and discuss the responses as you go. Feel free to throw out responses that don’t seem to fit. Take as much time as you need to come to consensus.
6. Using a marker, draw a box or circle around each cluster of ideas. For each cluster, come up with one statement that summarizes the ideas in that group. Make sure your statement starts with an active verb. Write it down on the paper next to the cluster. Do this for each cluster of ideas.
7. Each of the general summarizing statements from the previous step is one program-level outcome. You now have your program outcomes. Easy!  
Make sure to then check for alignment, decide on assessment methods, and submit your work, as described on the previous page.

## Checking for Alignment

The following matrix is helpful in determining if your intended program outcomes are consistent with your curriculum.

List the program outcomes across the chart, and the course numbers down the side of the chart (or vice versa). For each course, indicate whether each outcome is introduced, practiced, or demonstrated in that course. Usually, not every outcome is addressed in every course. **However, each program outcome should be addressed in at least one course.** It even better if an outcome is addressed in more than one course, so that students will get more exposure and practice with each of the outcomes your department has decided is important.

If you complete this matrix and you find that there are some program outcomes that are not addressed in any courses, you have two options. You could modify or redesign one or more courses so that they do address your program outcomes. Alternatively, if one of your program outcomes seems too ambitious or if you can't figure out how to work it in to the course sequence, you could decide to eliminate the outcome.

### Program Outcomes Alignment Matrix

Department:					
Program:					
Course: (list course numbers)	Program outcome 1	Program outcome 2	Program outcome 3	Program outcome 4	Program outcome 5
Course A					
Course B					
Course C					
Course D					
Course E					
Course F					
Course G					
I = Introduced, P = Practiced, D = Demonstrated					



Here is an example of a completed program alignment matrix. Note that in this case, the courses were listed across the top of the page and the outcomes were listed on the side. This is the opposite setup compared to the blank matrix shown on the previous page. Either way is fine. This setup was chosen in this case because it seemed to fit better on the page. Also note that there is an entry in every box, but that may not necessarily be true for your program. The important part is that every program outcome is addressed in at least one course.

<b>Program Alignment Matrix</b>				
<b>Chemistry</b>				
<b>Program Outcome:</b>	<b>Chem 1A</b>	<b>Chem 1B</b>	<b>Chem 12A</b>	<b>Chem 12B</b>
1. Apply mathematics to solve quantitative chemical problems	I, P, D	I, P, D	P, D	P, D
2. Conceptualize, model, and explain chemical processes qualitatively at the molecular level	I, P, D	I, P, D	P, D	P, D
3. Maintain a laboratory notebook according to standard scientific guidelines	I, P, D	P, D	P, D	P, D
4. Extract appropriate information, analyze and synthesize experimental results to reach correct conclusions	I, P, D	I, P, D	P, D	P, D
5. Write clear, well-documented lab reports using the language of science	I, P, D	I, P, D	P, D	P, D
6. Perform laboratory techniques safely and accurately	I, P, D	I, P, D	P, D	P, D
7. Apply principles of scientific ethics and academic integrity	I	I	P	D
I = Introduced, P = Practiced, D = Demonstrated				

## Assessing Program Outcomes

1. As a department, decide which program outcome or outcomes to focus on this semester. It's best to limit yourself to just one or two outcomes per semester.
2. Decide how to assess the outcome. What assignments will you use to assess the outcome? How will you collect the information? What courses will you use assignments from? Will you collect assignments from every section of that course, or just certain sections? As you think about these questions, keep in mind that you are trying to get a sense of the entire program, not just individual instructors. If you choose to collect information from a sampling of sections, make sure to choose the sections randomly. If you only choose assignments from the best instructors and skip the worst instructors, your assessment results may look more impressive, but they will essentially be dishonest because your sampling was not representative. You will therefore not have accurate information that you can use. The whole point of assessment is to collect information that can be used for improvement. If you don't have accurate information, you won't really know the problem areas and the best ways to improve.  
  
Try to keep in mind that there is no shame in having disappointing assessment results. The point is what you do with that information. As long as the results are being used to inform changes and improvements, no one can fault you!
3. During the semester, have the instructors give the assignment and evaluate it using an agreed-upon rubric. You might decide to collect samples of student work. Keep copies of the completed rubrics.
4. After the semester, have each instructor report on their results. This can be done in writing or as a departmental discussion. Assign someone (the department chair or a designee) to compile and summarize the results. Report on commonalities. (There is no need to report on which instructor got which results – this can remain internal information for your department.) Suggest changes or improvements to be made as a result of the assessments. Plan to actually make those changes.

Here are some examples of possible changes or improvements you could consider:

- State goals or objectives of assignment/activity more explicitly
- Revise content of assignment/activities
- Revise the amount of writing/oral/visual/clinical or similar work
- Revise activities leading up to and/or supporting assignment/activities
- Increase in-class discussions and activities
- Increase student collaboration and/or peer review
- Provide more frequent or fuller feedback on student progress
- Increase guidance for students as they work on assignments
- Use methods of questions that encourage competency

- State criteria for grading more explicitly
- Increase interaction with students outside of class
- Ask a colleague to critique assignments/activities
- Collect more data
- Nothing; assessment indicates no improvement necessary
- Other (describe)

Here are some ideas for department-wide changes or improvements:

- Offer/encourage attendance at seminars, workshops or discussion groups about teaching methods
- Consult teaching and learning experts about teaching methods
- Encourage faculty to share activities that foster competency
- Write collaborative grants to fund departmental projects to improve teaching
- Provide articles/books on teaching about competency
- Visit classrooms to provide feedback (mentoring)
- Create bibliography of resource material
- Have binder available for rubrics and results
- Analyze course curriculum to determine that competency skills are taught, so that the department can build a progression of skills as students advance through courses
- Nothing; assessments indicate no improvements necessary
- Other (describe)

5. Report on the results using the reporting forms, and submit them electronically to the Learning Assessment Committee.

6. Implement the changes your department decided on, and then assess this same outcome again (sometime in the near future). Compare the previous results to the current results (after having made the changes). This will show you if your changes made any measurable difference. If not, try a different possible improvement next time.

## Resources

### Laney College Learning Assessment Committee website

<http://www.laney.peralta.edu/learningassessment>

### How To Write SLOs website

<http://www.laney.peralta.edu/SLOs>

Includes lots of example SLOs written by Laney instructors.

For assistance on developing SLOs and/or developing assessment methods, contact Cheli Fossum, the Learning Assessment Committee co-chair, at [mfossum@peralta.edu](mailto:mfossum@peralta.edu) or 464-3272.

### Recommended Reading:

The most accessible resource is an online manual on assessment for community colleges written by Janet Fulks at Bakersfield College. It is organized into sections on the rationale for assessment, how to write student learning outcomes, assessment tools and data, course assessment, program assessment, and so on. It is very easy to use and very quick to read. This should be the first place to go to learn more about outcomes and assessment. There are also plenty of other resources and links included.

*Assessing Student Learning in Community Colleges* (2004)

<http://online.bakersfieldcollege.edu/courseassessment/>

### Good books on assessment:

All of these books are available to check out from the Laney College Library. They are listed in order of preference/usefulness.

Suskie, Linda. *Assessing Student Learning: A Common Sense Guide*. Bolton: Anker, 2004.

Highly recommended. Comprehensive, easy to read, makes good sense. Includes short chapters on the reasons to assess, good assessment practices, creating assessment plans, establishing learning goals (SLOs), choosing assessment strategies, using rubrics to plan and evaluate assignments, creating effective assignments, encouraging student reflection, portfolios, writing tests, conducting surveys, focus groups, and interviews, selecting published assessment instruments, summarizing and analyzing assessment results, sharing assessment results, and using assessment findings effectively and appropriately.

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

Comprehensive – covers the “paradigm shift” (from teaching to learning), learner-centered teaching techniques, SLOs, using feedback from students to improve learning, using rubrics, assessing critical thinking and problem solving, and using portfolios. Includes an excellent discussion of critical thinking and the value of solving ill-defined problems.

Walvoord, Barbara and Virginia Johnson Anderson. *Effective Grading: A Tool for Learning and Assessment*. San Francisco: Jossey-Bass, 1998.

Highly recommended. Includes chapters on the power of grading for learning and assessment, managing the grading process, making assignments worth grading, fostering motivation and learning in the grading process, establishing criteria and standards for grading, calculating course grades, communicating with students about their grades, making grading more time-efficient, using the grading process to improve teaching, and how to use grading as a tool for assessment.

Mary J. Allen, *Assessing Academic Programs in Higher Education*, Bolton: Anker, 2004.

Very clear and useful. Contains chapters on assessing educational outcomes, defining learning outcomes (SLOs), alignment of outcomes with the curriculum, assessment planning and implementation, direct assessment techniques (including published tests, locally developed tests, embedded assignments, competence interviews, and portfolios of student work), indirect assessment techniques (including surveys, interviews, focus groups, and reflective essays), making sense of assessment data, and putting it all together. Also includes the pros and cons of each assessment technique.

Stevens, Dannelle and Antonia Levi. *Introduction to Rubrics*. Sterling: Stylus, 2005.

Includes chapters on what rubrics are, why to use them, how to construct them, and how to grade using a rubric.

There are many other books on assessment available through the Laney College Library. Check the Learning Assessment Committee website for a link to the list of assessment books in the library.

<http://www.laney.peralta.edu/learningassessment>