

General Education

Learning Outcomes and Assessment
Handbook





TMCC

**Truckee Meadows
Community College
General Education**

Learning Outcomes and Assessment Handbook

Vice President for Academic Affairs

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TABLE OF CONTENTS

Truckee Meadows Community College Academic Leadership Team	5
Introduction	6
General Education Program or Curriculum Review Academic Year 2004-2005	7
Chapter I	7
Introduction	7
Part I	8
Part I	9
<i>General Education Mission, Goals, and Abilities.....</i>	<i>9</i>
<i>Definitions of abilities.....</i>	<i>10</i>
Part II	12
<i>Criteria to Develop and Approve Curricula Supporting General Education.....</i>	<i>12</i>
Chapter II	16
Part I	16
<i>Student Learning Outcomes and Assessments (SLOA).....</i>	<i>16</i>
Part II	20
<i>The Process of Designing Discipline and Program Outcomes at TMCC.....</i>	<i>20</i>
Part III	22
<i>A Basic Guide to Writing Student Learning Outcome Statements</i>	<i>22</i>
<i>Action verbs.....</i>	<i>22</i>
<i>Steps for Designing Learning Outcomes and Assessment: Preliminary Work-First 8 Steps.....</i>	<i>24</i>
<i>Benefits of Using Student Learning Outcomes</i>	<i>24</i>
Part IV	27
<i>Assessment and Measurement of Learning Outcomes.....</i>	<i>27</i>
<i>Developing a Discipline or Departmental Assessment Plan</i>	<i>30</i>
Conclusion.....	33
Appendix 1	34
Academic Affairs.....	34
Curriculum Review	34
<i>Program and Logistics for January 11 and 12, 2005*</i>	<i>34</i>
<i>General Education and Career Programs.....</i>	<i>35</i>
Appendix 2	36
Glossary of General Terms Related to Outcomes and Assessment.....	36
<i>Action Plans:</i>	<i>36</i>
<i>Administrative Objectives</i>	<i>36</i>
<i>Assessment Cycle</i>	<i>36</i>
<i>Assessment Results</i>	<i>36</i>
<i>Assessment Tool.....</i>	<i>36</i>
<i>Benchmark</i>	<i>36</i>
<i>Bloom's Taxonomy of Cognitive Objectives</i>	<i>37</i>
<i>Course Embedded Assessment</i>	<i>37</i>
<i>Direct Measures of Learning.....</i>	<i>37</i>
<i>General Education Assessment</i>	<i>37</i>
<i>Goal.....</i>	<i>37</i>
<i>Indirect Measures.....</i>	<i>37</i>

Learning Outcomes and Assessment Handbook

<i>Intended Student Outcomes</i>	37
<i>Learning Outcomes</i>	38
<i>Measurement</i>	38
<i>Methods of Assessment</i>	38
<i>Objective</i>	38
<i>Outcome</i>	38
<i>Outcomes Assessment</i>	38
<i>Performance Assessment</i>	38
<i>Portfolio</i>	39
<i>Qualitative Methods of Assessment</i>	39
<i>Reliability</i>	39
<i>Rubrics</i>	39
Appendix 3	40
Responsibilities for Assessment at Truckee Meadows Community College: Shared Accountability	40
Appendix 4	41
Samples of Learning Outcomes Statements and Measurements	41
MTL 163B	41
MTL 263	41
Biology 188B	42
NRS 210	42
ENG 107 Technical Communications I	43
NURSING 211	44
RT 128B: Imaging Equipment	44
RT 118B: Radiology, Physics and Circuitry	45
Appendix 5	47
Curriculum Review Forms	47
Appendix 6	48
Membership of SLOA-Academic Year 2004-2005	48
<i>Departments Representatives</i>	48
<i>Co-chairs:</i>	48
<i>Support</i>	48
References	49

**T R U C K E E M E A D O W S C O M M U N I T Y C O L L E G E
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INTRODUCTION

Truckee Meadows Community College has evolved over the past thirty years as a vibrant and vital alternative for students seeking training for careers — general education courses for transfer — programs or pre-program qualifications or personal interest. A wide diversity of students has accessed the college and meeting their educational needs is paramount. The TMCC Faculty Senate established a subcommittee on General Education that has worked over the past couple of years with the Student Learning Outcomes and Assessment Committee (SLOA) to revise and review General Education. Several key elements and concepts constitute this work:

- A review of General Education being done throughout the nation—using, among other sources, the rich resources of the Internet
- The development of a mission statement, goals, and abilities—using the college seven strategic goals as a backdrop
- The development of new criteria to guide the development, maintenance, and review of General Education
- A set of knowledge areas and suggested objectives to provide for the proper distribution of courses as well as their development
- A thorough review of the curriculum and programs requiring General Education courses.

One of the most significant accomplishments SLOA made was the establishment of “abilities” which will provide opportunities to embed liberal education in career programs, with the tool to maintain accountability therein. These abilities will equally allow for substantive opportunities to assess General Education. This handbook is not the work of one individual rather it is a compilation of work done cooperatively among members of SLOA and reviewed by the TMCC academic deans. Furthermore, much of the work reflects what other institutions have done. We hope this handbook will contribute strongly in furthering the assessment of student learning at TMCC and other institutions of higher learning. Much gratitude to members of SLOA, the TMCC Academic Deans, Dr. Jamie Campbell, and colleagues from other institutions from whose work we borrowed.

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GENERAL EDUCATION PROGRAM OR CURRICULUM REVIEW ACADEMIC YEAR 2004 - 2005

CHAPTER I

Introduction

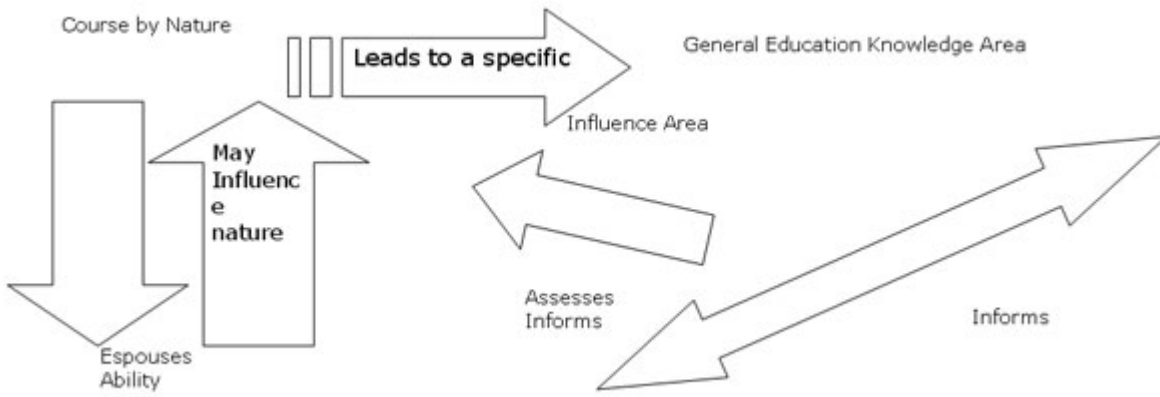
The General Education Curriculum review at Truckee Meadows Community College was initiated by the Student Learning Outcomes and Assessment (SLOA) Committee and by a General Education Subcommittee of the Curriculum and Academic Standards Committees. The need to assess General Education coherently and comprehensively is made easier with a formal all-inclusive review of the curriculum. Undertaken in the spring of 2005, this work is intended to position the college to meet the diverse needs of the twenty-first century students and to develop "Intentional Learners" as advocated by the American Association of Colleges and Universities in *Greater Expectations*. As such TMCC is joining in the effort to make Liberal Education an engaged activity to meet learning outcomes and abilities designed and approved by the college community.

The SLOA committee held a retreat during the summer of 2004 to draft a proposal to guide the curriculum review. The academic deans shared the drafts of the proposal within their divisions at meetings attended by all faculty members. SLOA held a town hall meeting open to all faculty and staff. The College Curriculum Committee as well as the Academic Standards Committee held sessions at their committee meetings to review the proposal and receive feedback. SLOA approved a plan to post the proposal online and to provide opportunities for individuals to comment as well as conducted an outreach effort. More than a dozen sessions were held during the months of October, November, December, and January. These outreach sessions sought to inform all faculty, not yet involved, and other staff throughout the college, including: Student Services, Finance and Administration, Student Government (Associated Students of Truckee Meadows), and Classified staff.

There is a national call for a new emphasis on General Education (SCAN Skills; *Greater Expectations*). This new emphasis on the curriculum requires not only changes on the part of students, but also provides opportunities to explore new pedagogies and activities such as "Learning Communities" and "Active Learning." The curriculum review undertaken at the college is intended to link the new General Education mission, goals, and abilities to the curriculum. This task is accomplished as the faculty review the curriculum in light of a new paradigm.

Relationships: course, ability and knowledge area: The course is set by its nature in the discipline. The nature of the course determines its knowledge area. The nature of the course gives shape to the abilities. The ability may influence the nature of the course. The ability allows for the assessment of the course and embodies the knowledge area. The knowledge area documents both the ability and the course. The knowledge area provides boundaries for accountability such as course approval. *See Figure 1.*

Figure 1. Relationships: Course, Ability and Knowledge Area



Part I

GENERAL EDUCATION MISSION, GOALS, AND ABILITIES

Truckee Meadows Community College strives to establish and implement a broad educational foundation that integrates a body of knowledge and skills with study of contemporary concerns that are all essential to meeting individuals' social, personal, and career goals. The abilities people need to participate successfully in this complex and changing world are identified. These abilities emphasize our common membership in the human community; personal responsibility for intellectual, lifelong learning; and an awareness that we live in a diverse world.

The General Education review introduced some new components to help governance groups in the approval, review and maintenance of the General Education curriculum:

- A mission statement to uphold a coherent curriculum
- A set of goals to achieve academic excellence
- A set of abilities for students graduating with a degree from TMCC to meet and for TMCC to be accountable: These abilities form the basis for assessing General Education at TMCC
- Criteria to develop and approve curricula supporting General Education
- A set of knowledge areas to meet accreditation, state, degree and transfer requirements

General Education Mission Statement

General Education at TMCC provides a coherent curriculum that consists of a rigorous foundation of interrelated academic and applied experiences that introduce students to diverse ways of thinking and of understanding the world.

General Education Goals

The goals of the General Education curriculum are for students to:

- develop analytical thinking, problem-solving, and communication skills
- develop life-long learning skills and the ability to independently construct their own knowledge base
- utilize skills learned to make useful and informed life decisions
- participate in a community of learners that supports a diverse and collaborative environment for intellectual inquiry
- function successfully and effectively in a global society and workplace
- adapt to a rapidly evolving technological environment

List of Abilities

Students who successfully complete General Education requirements at Truckee Meadows Community College will demonstrate some or all of the following abilities:

1. Analytical thinking skills
2. Communication skills
3. Collaborative skills
4. Quantitative and scientific reasoning skills
5. Global and cultural awareness skills
6. Personal, social and civic responsibility skills
7. Information literacy and research skills
8. Artistic and aesthetic awareness skills
9. Computer and Information Technology skills

DEFINITIONS OF ABILITIES

The different abilities are defined as follows:

Analytical thinking skills: To develop skills and attitudes that enable one to grasp complexities in order to see relationships, similarities, and differences among ideas; to analyze one's own ideas and thoughts, as well as the ideas and thoughts of others; to draw inferences and conclusions.

Communication skills: To read with comprehension; to listen, speak, and write competently.

Collaborative skills: To develop skills and attitudes that enable one to interact effectively with others, whether one-on-one, in a small group, in an organization, or with an audience.

Quantitative and scientific reasoning skills: To reason logically, using both induction and deduction; to discern bias, and subjectivity; to perform appropriate calculations; to recognize and weigh scientific evidence; to understand, evaluate, model and effectively utilize quantitative and qualitative data.

Global and cultural awareness skills: To develop a broad understanding of linguistic, political, social, environmental, religious and economic systems of the world; to increase students' understanding of the growing interdependence of nations and peoples and develop their ability to interact in multi/cross-cultural settings; to develop skills and attitudes that enable one to respect and appreciate diversity.

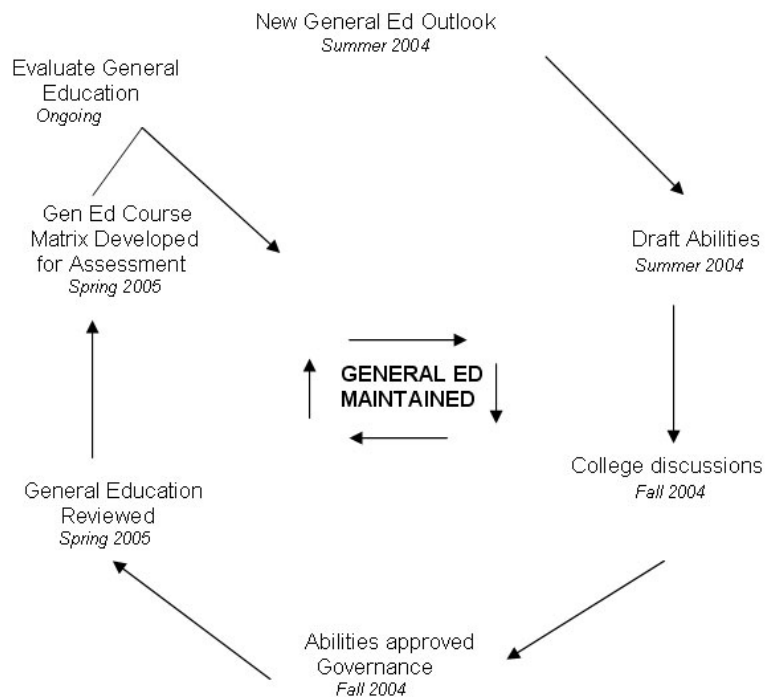
Personal, social, and civic responsibility skills: To develop skills and attitudes necessary to function effectively as responsible, ethical and contributing citizens of the community, state and nation.

Information literacy and research skills: To formulate relevant research questions; to find, analyze, and use information from field, print, and/or electronic sources; to evaluate the applicability of the data for a particular situation; to document properly and address questions concerning the responsible use of information.

Artistic and aesthetic awareness skills: To develop skills and acquire experiences that enable one to value, reflect upon, and appreciate the creative process and its manifestations including its role in the human experience.

Computer and Information Technology skills: To understand computer and information technology and how it relates to the individual, society, and the environment; to use computer applications responsibly as tools for creativity, researching, organizing, problem solving, publishing, presenting, and/or communicating information and ideas.

Figure 2. General Education Review Timeline



This model will allow TMCC to review the General Education curriculum in the spring of 2005 and to maintain its vitality in conjunction with its assessment for years to come. The results of the assessment will allow the college to uphold a continuous improvement process.

Part II

CRITERIA TO DEVELOP AND APPROVE CURRICULA SUPPORTING GENERAL EDUCATION

The following criteria guide the operation of the General Education curriculum:

1. The curriculum will be structured to reflect a breadth of knowledge among academic disciplines.
2. The curriculum will comply with the Nevada System of Higher Education Code requirements and the guidelines for degrees and certificates.
3. Courses in the General Education curriculum will be comparable to courses within the Nevada System of Higher Education, allowing for ease of transfer.
4. The General Education curriculum will complement, rather than duplicate, the student's specialized curriculum. Students will be required to take general education courses outside of their major discipline. Some courses may serve several objectives, outcomes, or requirements.
5. General Education requirements in a curriculum may be completed through satisfactory completion of credit courses, transfer of courses meeting similar outcomes, through credit by examination, and/or through satisfactory completion of performance or competency tests.
6. A general education course may be substituted for an equivalent course with similar outcomes. A course that does not meet general education outcomes and rigor may not be substituted for a general education course. The reverse may apply, however, with proper approval.
7. General Education should contribute to a student's reading and writing ability.
8. General Education should contribute to a student's information literacy skills. Library resources should be incorporated to provide experience in locating, evaluating and using the literature in the discipline.
9. General Education should contribute to a student's appreciation of multicultural and diversity issues.
10. All necessary modifications of the General Education Curriculum (not individual courses) will be discussed college-wide and appropriate governance action taken prior to implementation.
11. Courses originally designed for meeting major requirements cannot be later designated as General Education unless approved by the designated committee.

Knowledge Area

The knowledge areas at TMCC collectively provide students a broad educational foundation that empowers individuals to address their personal, career and social needs. The knowledge areas contribute to the education and development of students and include an appreciation of diversity.

Knowledge Areas

The areas are as follows:

1. Language Arts and Communication
2. Mathematics
3. Natural Sciences
4. Social and Behavioral Sciences
5. Humanities, Arts and Literature

Through the review of general education, disciplines will develop learning outcomes to fit within these categories. The quantity of credits required for programs remains unchanged; however, the quality of the course work needs be updated.

Representative Objectives for General Education Knowledge Areas:

1. **Language Arts and Communication:** To develop effective language skills including reading, writing, listening and speaking. As a base, all students should complete introductory communication requirements early in their collegiate studies. Writing competency is an ongoing process to be reinforced through writing-intensive courses. Speaking and listening skills need reinforcement through multiple opportunities for interpersonal communication, public speaking, and discussion. Each course claiming this knowledge area will meet over 50% of the objectives listed below.

Representative Objectives

Successful students:

- a. write and speak by using the process of invention, organization, drafting, revision, editing, and presentation;
- b. participate effectively in groups with emphasis on listening, analytical and reflective thinking, and responding;
- c. locate, evaluate, and synthesize in a responsible manner material from diverse sources and points of view;
- d. select appropriate communication choices for specific audiences;
- e. construct logical and coherent arguments;
- f. use authority, point-of-view, and individual voice and style in their writing and speaking;
- g. employ syntax and usage appropriate to academic disciplines and the professional world.

2. **Mathematics:** To increase students' knowledge about mathematical and logical systems and modes of thinking. This will enable students to appreciate the breadth of applications of mathematics, evaluate arguments, and detect fallacious reasoning. Students will learn to apply mathematics, logic, and/or statistics to help them build further knowledge, recognize, analyze, and exploit patterns, and make decisions in their lives and careers. Each course claiming this knowledge area will meet over 50% of the objectives listed below.

Representative Objectives

Successful students:

- a. demonstrate inductive and deductive reasoning skills;
- b. illustrate historical or contemporary applications of mathematical/logical systems in both practical and abstract contexts;
- c. clearly express mathematical/logical ideas in writing;
- d. construct valid mathematical/logical arguments using contemporary notation and symbolism;
- e. demonstrate higher-order problem-solving and/or modeling strategies;
- f. perform computations appropriate to the mathematical context and system.

3. **Natural Sciences:** To improve students' understanding of scientific principles and of the methods of scientific inquiry, i.e., the ways in which scientists investigate natural phenomena. As a basis for lifelong learning, students need to know the vocabulary of science and to realize that while a set of principles has been developed through the work of previous scientists, ongoing scientific inquiry and new knowledge will bring changes in some of the ways scientists view the world. By studying the problems that engage today's scientists, students learn to appreciate the importance of science in their lives and to understand the value of a scientific perspective. Students should be encouraged to study all branches of science. Each course claiming this knowledge area will meet over 50% of the objectives listed below.

Representative Objectives

Successful students:

- a. demonstrate understanding of scientific theories;
 - b. use the language and methods of the sciences;
 - c. demonstrate the ability to use the scientific method: formulate and test hypotheses by performing laboratory, simulation, or field experiments. One of these experimental components should develop, in greater depth, students' laboratory experience in the collection of data, its statistical and graphical analysis, and an appreciation of its sources of error and uncertainty;
 - d. communicate their experimental findings, analyses, and interpretations both orally and in writing;
 - e. evaluate societal and environmental issues from a natural science perspective, ask questions about the evidence presented, and make informed judgments about science-related topics and policies;
 - f. understand and appreciate scientific phenomena;
 - g. understand scientific and technical developments and their application and ethical implications to society and environment.
4. **Social and Behavioral Sciences:** To increase students' knowledge of how social and behavioral scientists discover, describe, and explain the behaviors and interactions among individuals, groups, institutions, events, and ideas. Such knowledge will better equip students to understand themselves and the roles they play in addressing social and cultural issues facing humanity. Each course claiming this knowledge area will meet over 50% of the objectives listed below.

Representative Objectives

Successful students:

- a. employ the methods and data that social and behavioral scientists use to investigate the human condition;
 - b. compare social institutions and processes across a broad range of historical periods and/or cultures;
 - c. use and critique explanatory systems and theories;
 - d. develop and communicate alternative explanations or solutions for contemporary social issues;
 - e. use appropriate terminology to convey key concepts of the social sciences.
5. **Humanities, Arts and Literature:** To expand students' knowledge of the human condition and human cultures, especially in relation to behavior, ideas, and values expressed in works of human imagination and thought. Students will engage in critical analysis, form aesthetic judgments, and develop an appreciation of the arts and humanities. Each course claiming this knowledge area will meet over 50% of the objectives listed below.

Representative Objectives

Successful students:

Learning Outcomes and Assessment Handbook

- a. demonstrate awareness of the scope and variety of works in the arts and humanities;
- b. understand those works as expressions of individual and human values within an historical and social context;
- c. respond critically to works in the arts and humanities;
- d. engage in the creative process or interpretive performance;
- e. articulate an informed personal reaction to works in the arts and humanities;
- f. develop skills and/or attitudes that enable one to value aesthetics and creativity.

CHAPTER II

Part I

STUDENT LEARNING OUTCOMES AND ASSESSMENTS (SLOA)

Introduction

The Student Learning Outcomes and Assessment Committee (SLOA) was formed to finalize the work initiated by the Institutional Assessment Committee (1999 to 2004). It originally had twenty-three members representing all the instructional divisions and departments at Truckee Meadows Community College; a list of original members can be found in the appendix. Following proper consultation with governance, in 2004, SLOA and the General Education Subcommittee merged to make the evaluation and review of General Education a comprehensive and coherent process; the committee began the work of constructing learning abilities and designing an assessment process. The product of their work is detailed in this handbook. At the April 2006 SLOA meeting, a decision was made to split the committee into two. As the original SLOA committee had completed the difficult work of constructing learning abilities, an assessment reporting structure, and assessment report guidelines, committee members felt that the large version of SLOA had accomplished its primary goals and that a smaller body could oversee implementation of assessment procedures. One committee will continue to be named SLOA and its membership, charges, and reporting structure are outlined below. The revived General Education Student Learning Outcomes and Assessment Sub-Committee composed of members from the Faculty Senate Academic Standards and Curriculum Committees will temporarily serve as the institution-wide body for GE assessment issues for fall 2006; in the fall, Faculty Senate will consider the creation of a new general education committee.

Student Learning Outcomes and Assessment (SLOA) Committee

Membership:

- Teaching faculty representative from each school/division
- SLOA Coordinator (initial chair)
- One representative from Institutional Research
- One representative from Student Services
- One Academic Dean
- Representatives from Faculty Senate Curriculum and Academic Standards Committees

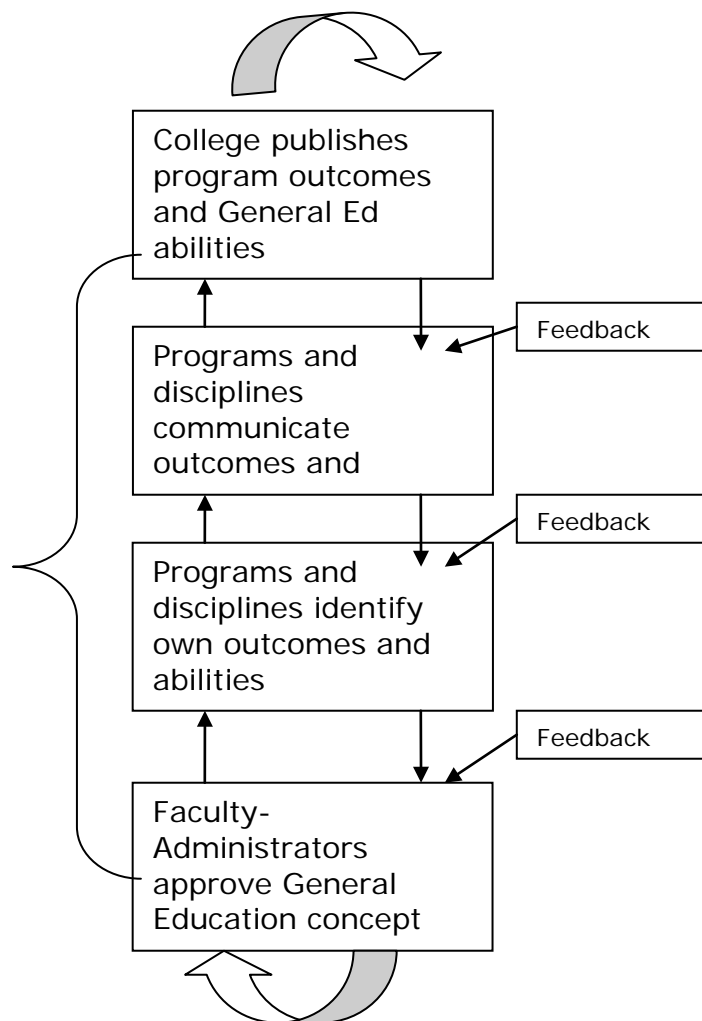
Charges:

1. Serve as the representative institution-wide body for course, discipline, and program level student learning outcomes and assessment issues
2. Provide policy guidance on course, discipline, and program level student learning outcomes and assessment issues. In doing so, this committee should:
 - develop and maintain expertise in outcomes assessment
 - research best practices
 - evaluate the progress of course, discipline, and program level assessment processes
 - promote assessment awareness and participation
 - recommend appropriate modifications or changes to course, discipline, and program level assessment processes

Reporting Structure:

SLOA will continue to report to the Vice President for Academic Affairs who is charged with staffing the committee; significant policy proposals will continue to go through the appropriate, current governance structures.

Figure 3. Learning Outcomes Development Organizational Chart



This model features a system that engages faculty and administrators in a joint effort to develop student learning outcomes and provides for feedback throughout the process.

Institutionalize Learning Outcomes and Assessment: Since faculty and administrators change periodically, it is important that SLOA be an institutional entity ingrained in the fabric of the institution. Thus, the membership of SLOA is constituted to address the inevitable as follows:

- Use a sample group of the faculty and others for the committee.
- Establish the avenues for support for departments, and disciplines as close to them as possible. Members of committee serve as resources to their departments.
- Use internal best examples and share them with faculty addressing Learning Outcomes issues.

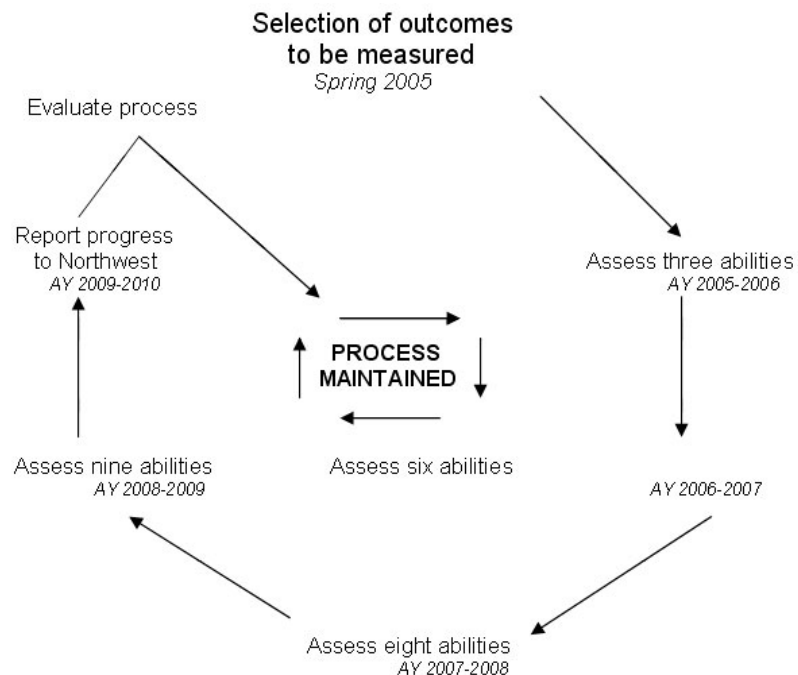
Learning Outcomes and Assessment Handbook

- d. Provide helpful materials and make the outcomes and assessment process easy for faculty to implement.
- e. Develop practice and expertise among members of the committee and replicate to remain current in the field.

Table 1A. Timeline for Assessment of General Education

Tasks	Completion date	Expected outcomes	Person responsible	Status
Evaluate Gen Ed	Summer 2004	New Gen Ed outlook	SLOA	Completed
Draft abilities	Summer 2004	9 abilities drafted	SLOA Committee	Nine drafted
Abilities approved	Fall 2004	Number of abilities set	SLOA Committee	December 10, 2004
Review Gen Ed courses for outcomes (2-3)	January 2005	All courses have outcomes-syllabi	Faculty, Acad, Admin CC, and SLOA Committee	In Progress
Develop matrix accounting for abilities	Spring 2005	Matrix completed	SLOA and Academic Leaders	In Progress
Select a regular schedule for assessment	Fall 2005	List established	SLOA, Deans and Academic Leaders	
Initiate assessment	Fall 2005/Summer 2006	Assessment completed for three abilities	Faculty in disciplines, SLOA, Deans, Chairs	
Second year assessment	Academic year 2006-2007	Assessment completed for six abilities	Faculty in disciplines, SLOA, Deans, Chairs	Under review
Third year assessment	Academic year 2007-2008	Assessment completed for eight abilities	Faculty in disciplines, SLOA, Deans, Chairs	Under review
Fourth year assessment	Academic year 2008-2009	Assessment completed for nine abilities	Faculty in disciplines, SLOA, Deans and Chairs	Under review
Fifth year assessment	Academic year 2009-2010	Progress report: Northwest, Evaluate process	SLOA and Office of the Vice President of Academic Affairs	Under review

Figure 4. Graph of Timeline and Activities for Assessment of General Education



This model allows for TMCC to assess General Education comprehensively and coherently. It builds in an evaluation of the process as well as its maintenance.

Part II

THE PROCESS OF DESIGNING DISCIPLINE AND PROGRAM OUTCOMES AT TMCC

The process TMCC uses to design the assessment of General Education features a thorough review of the General Education curriculum as well as career courses. The review provides opportunities for a discipline or a department to think about curriculum and learning issues important to its members and students or audience. When learning outcomes are identified, units can determine in which courses each outcome is addressed, where excessive redundancy and overlap occur, and where gaps are present. While the development and incorporation of learning outcomes in courses at TMCC have been implemented since 1999, it has only affected courses presented to the Curriculum Committee. Two challenges have emerged from this process:

1. Courses that have not been reviewed by the Curriculum Committee or are new since the implementation do not have statements of learning outcomes and measures;
2. Through leadership changes, the faculty have not had qualified support to develop learning outcomes congruent to course content and objectives.

The review is designed to facilitate a comprehensive and coherent assessment process.

Designing student learning outcomes for students in a discipline or department requires the participation of all departmental faculty and support of academic administrators. The following are desirable activities for an effective design of learning outcomes:

- The design of outcomes begins with a series of conversations in small groups.
- Faculty look to the learning goals for students in their courses or identify knowledge and performance values in the discipline - both those stated explicitly and those implied - as a way to begin determining learning outcomes for students. As conversations continue, similar goals for learning begin to emerge.
- The outcomes are listed and revised as necessary until a consensus is built.
- Once faculty agree on outcomes, faculty think about and wordsmith them.
- They are made public.
- Learning outcomes are reviewed regularly to take new knowledge, methodology, and practices in the field into account.

Inclusion and negotiation. Both time constraints and the difficulty of reaching broad consensus on how to represent the discipline may present the temptation to delegate the writing of the learning outcomes to a few faculty. Insofar as the learning outcomes are inclusive and negotiated among all faculty, they will most faithfully represent the rich range of approaches available to students in the discipline or the department. TMCC provided incentives for part time faculty to be involved in this process to compensate for the absence of full time faculty in some disciplines.

Focus on building a culture of excellence. Although importing learning outcomes provides for expediency, it lacks the opportunity for faculty members to take time out and reflect on their disciplines as they pertain to Truckee Meadows Community College. Expediency ultimately robs our students of our creativity, care for them and our discipline and it deprives us of the opportunity to build our own academic culture of excellence and define experiences to make TMCC stand out as a community of learners.

Measurability of student learning outcomes. Some learning outcomes are difficult or may even appear impossible to measure. Outcomes that are difficult to measure or currently impossible to measure are just as important or more important to faculty and students as those that are more readily measurable. They should be included in outcomes statements along with outcomes that are more easily assessed. Outcomes that appear to be impossible to measure under the best of circumstances should be questioned with an eye to reconceptualizing such that they become measurable. Concepts that are hard to measure may provide clues or opportunities to redesign the curriculum, activities and experiences to help students achieve intended outcomes.

Faculty involvement in the planning process. In order to maximize faculty involvement, each discipline will develop, approve and recommend its learning outcomes based on the General Education mission, goals and abilities. The involvement and commitment of the discipline or department will ensure that assessment practices reflect the uniqueness of disciplines and the diversity of educational goals and missions determined by the college, the division and the department.

Part III

A BASIC GUIDE TO WRITING STUDENT LEARNING OUTCOME STATEMENTS

In addition to these ideas, some samples drawn from work done by TMCC faculty are attached in Appendix 3. The examples include courses from a variety of disciplines. A glossary of terms is also available in Appendix 1. Many of these concepts are adapted from multiple sources some of which are acknowledged in the references section.

What is a learning outcome statement?

A learning outcome is a statement of what a learner is expected to know, understand or be able to do as a result of a learning process.

Why write learning outcome statements?

- Identifying outcomes is an effective way to review curriculum and content. This leads to a more balanced and well sequenced curriculum.
- It is effective in designing appropriate assessment.
- Faculty members are easily able to evaluate the effectiveness of their teaching by asking whether the outcomes have been achieved.
- An instructional shift from teaching to learning is facilitated. The focus is on the learner rather than the teacher.
- Students will know exactly what they are expected to learn. They know where they stand and the curriculum is more open to them.
- Students begin to take more responsibility for their own learning when they know what they are expected to do and what standard they are expected to achieve.
- Counselors, advisors and career program coordinators or directors are more informed to advise students and choose appropriate courses to supplement the curriculum in the major.

What do you need to think about before you write learning outcome statements? Some ideas!

- What information or content do you want the students to learn from your course?
- What do you want them to do with that information?
- What skills or competencies or abilities do you want them to learn or develop?
- What kinds of higher level thinking do you want them to engage in?
- How do you expect students to demonstrate what they have learned and how well they have learned it?
- At the very minimum, what should students know and be able to do when they finish your class?
- How do you think they will be able to use the information and skills that they have developed?

ACTION VERBS

The table below features action verbs that are commonly used to state learning outcomes. The following list can help to generate ideas for writing learning outcome statements.

Table 2: Six Levels of Thinking

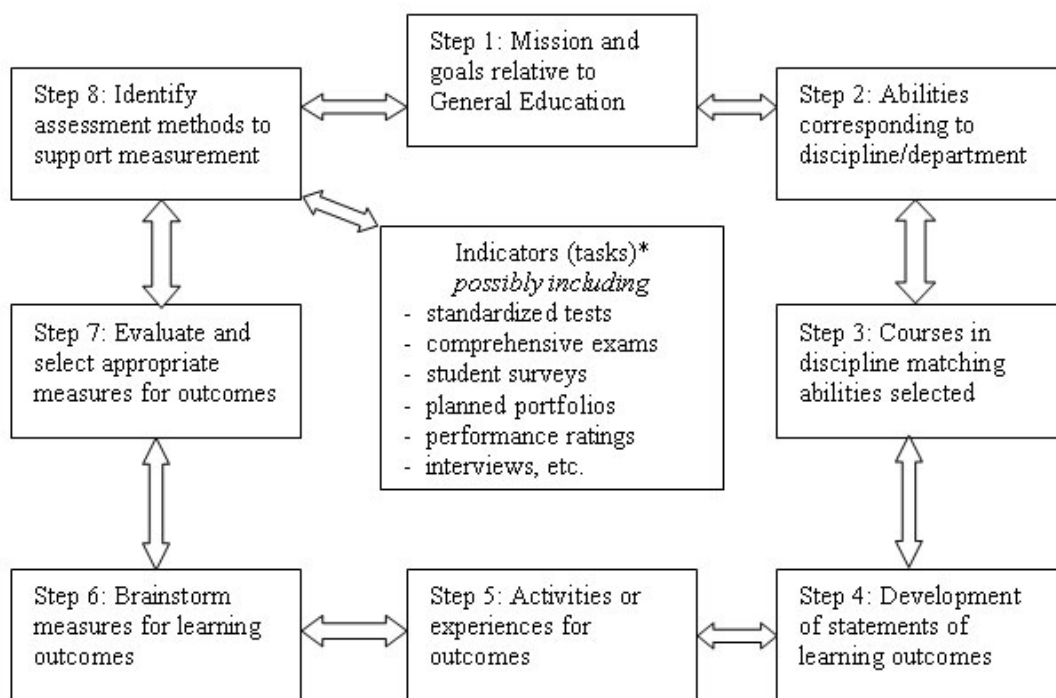
Knowledge	Comprehension	Application	Analysis	Synthesis	Evaluation
Define	Describe	Apply	Analyze	Arrange	Appraise
List	Discuss	Demonstrate	Appraise	Assemble	Assess
Name	Explain	Dramatize	Calculate	Collect	Choose
Recall	Express	Employ	Categorize	Compose	Compare
Record	Depict	Illustrate	Criticize	Construct	Estimate
Relate	Locate	Interpret	Debate	Create	Evaluate
Underline	Recognize	Operate	Diagram	Design	Judge
Label	Report	Practice	Differentiate	Formulate	Measure
Quote	Restate	Schedule	Distinguish	Manage	Rate
Locate	Review	Sketch	Examine	Organize	Revise
Match	Translate	Use	Experiment	Plan	Score
Cite			Inspect	Prepare	Select
Reproduce			Question	Propose	Value
Identify			Relate	Combine	Defend
State			Solve	Integrate	Justify
			Test		
			Classify		

Source: <http://www.thelearningmanager.com>

Some examples of learning outcome statements can be found in Appendix 3.

STEPS FOR DESIGNING LEARNING OUTCOMES AND ASSESSMENT: PRELIMINARY WORK-FIRST 8 STEPS

Figure 5. Step-by-Step Guide Chart for Developing Learning Outcomes



*Diamond, R. M., (1998) *Designing and Assessing Courses and Curricula: Practical guide* (p. 255)

BENEFITS OF USING STUDENT LEARNING OUTCOMES

(Adapted from several sources)

Increased student awareness of their own learning

Student learning outcomes give students a way to think and talk about what they have learned. Being able to state - either verbally or in writing - what they now can do that they could not do previously helps students organize their own learning for themselves and for external audiences, such as job interviewers. Student learning outcomes and the statement thereof make it easier for students to "know what they know; what they are able to do and what they understand" and give them a language to communicate what they know to others.

Another avenue for faculty self-assessment

The use of assessment of student learning outcomes help faculty evaluate and improve their own teaching.

A common language about learning for disciplines or departments

Student learning outcomes can help disciplines or departments develop a common language that students, faculty, and staff share. This common language can facilitate communication and build bridges among various departmental services

for students, such as advising and recruitment. Disciplines and departments control the quality of information that is given to students.

Greater faculty and student satisfaction with teaching and learning

Faculty will know where their courses fit into the overall curriculum. They can enhance their teaching effectiveness by not spending time teaching content and skills that students are expected to learn in other courses or curricula: elimination of duplication. They can more easily redesign their units to include innovative pedagogies and appropriate technologies to support their teaching as well as cooperate with other faculty where contents are complementary.

A context for course design and revision

Student learning outcomes can assist design of new courses, especially in justifying why the course is necessary. In addition, student learning outcomes can help faculty revise courses they currently teach, assisting them, for example, in developing writing assignments that incorporate the skills, methodology, and thinking that the college, the discipline or the department value.

A map for curricular assessment and change

Use of learning outcomes helps disciplines and departments think about curriculum. When learning goals are defined, the departments can determine in which courses each outcome is addressed, where excessive redundancy and overlap occur, and where gaps are present.

Assistance for advisors

Course outcomes are an important first step toward clear communication of expectations to students. With well thought out and developed course outcomes that have been made public to students, advisors who may be unfamiliar with a discipline have a great tool to assist students.

Advising tools

The job of advising becomes easier when advisors have expected course and program outcomes that they can point to when advising students on either course or major selection.

Improvement in promotional materials

Departments will be able to promote their programs to students and other constituents via the presentation of the outcomes toward which they strive. Common student learning outcome language can also be of enormous benefit in designing web pages intended to highlight departmental curricula and devising keywords as metatags to attract "hits" from search engines.

Accreditation and Accountability

Many accrediting associations, including the Northwest Association of Colleges and Universities are including lists of student learning outcomes and evidence of the extent to which they are being met as part of their requirements.

Assessment of student learning outcomes is a locally controlled task of representing what students can do at the end of a particular degree program or course that they couldn't do at the beginning. Accountability for our purposes is more an aggregate, institutional response to external mandates (from the legislature, NSHE or UCCSN), and is not

the purpose of student learning outcomes and assessment. It should be clear however, that substantive assessment of student learning outcomes will uniquely assist the college if called upon to demonstrate accountability.

Relationship between assessment and student learning outcomes

There is no single way to assess student learning. But student learning outcomes make effective assessment possible, because they give us knowledge, abilities, and skills to look for in students' work. Some outcomes are easier to assess than others; in fact, often those outcomes that are difficult to measure are the most important to educators. Therefore, it is important that disciplines include outcomes that matter to them, whether or not they can be easily assessed.

Part IV

ASSESSMENT AND MEASUREMENT OF LEARNING OUTCOMES

The assessment of learning outcomes gives us the evidence of what and how much students are learning, what they know, what they can do with what they know, and how deep their knowledge is. At the course level, faculty should use the results of assessment to improve students' learning and adjust curricula and prerequisites. At the program level, not only can the measurements and the results help improve students' learning, they may be able to help improve the program and provide evidence during the program review process. At the college level, assessment can help the institution make decisions on resources and help develop policies and practices to improve students' learning. Results of the measurements may also help the institution eliminate policies and practices that may serve as barriers for students' learning.

A General Framework for Assessment

The Nine Principles of Good Assessment Practice set forth by the American Association for Higher Education provide faculty with an excellent framework for thinking about assessment. These principles are:

1. The assessment of student learning begins with educational values.
2. Assessment is most effective when it reflects an understanding of learning as multidimensional, integrated, and revealed in performance over time.
3. Assessment works best when the programs it seeks to improve have clear, explicitly stated purposes.
4. Assessment requires attention to outcomes but also and equally to the experiences that lead to those outcomes.
5. Assessment works best when it is ongoing, not episodic.
6. Assessment fosters wider improvement when representatives from across the educational community are involved.
7. Assessment makes a difference when it begins with issues of use and illuminates questions that people really care about.
8. Assessment is most likely to lead to improvement when it is part of a larger set of conditions that promote change.
9. Through assessment, educators meet responsibilities to students and to the public.

Measuring Outcomes

Most student learning outcomes should be potentially assessable. Some will be much harder to assess than others. Furthermore, we will have confidence in assessing some outcomes with a single measurement; others may require multiple measures. It is almost inevitable that the most important outcomes are also the hardest to measure and often require multiple measures.

When developing student learning outcomes, one reasonable test for the value of the specification of an outcome is whether attainment of this outcome could be measured. A less reasonable test is whether it is measurable immediately. Being able to measure it now is a bonus. For example, an outcome could be: "students will be able to function effectively as team members to solve a significant problem in the field." Assessing whether one can function effectively as a team member qualifies as a difficult but not impossible outcome to assess. However, if there are no opportunities in the

curriculum for the student to demonstrate that ability, the department could not assess its attainment. For this example, the problem lies in the curriculum, not in the outcome itself. This example also illustrates how outcomes specification alone may suggest needed changes in the curriculum.

An example of an unmeasurable outcome might be: "The student will appreciate the great art of the world." To make this outcome measurable, faculty would have to better delineate what is meant by appreciation and by the great art of the world. This example leads us to an important point. One might assume on the surface that faculty conversation about the contextual meaning of these terms would be done in the service of defining student learning outcomes and would have little value beyond this. In fact, this process is much more in service of understanding the discipline and how it might and should affect students. Ending with a potentially measurable outcome may be the least important result.

Ways of Assessing Learning Outcomes - General Considerations

There are essentially two ways to assess learning outcomes. The easier way is by asking students, themselves, to assess their own learning. When included as part of their grades, student self-assessment can be effective at both course and program levels. Graduating students in exit surveys can assess programmatic outcomes. Alumni can be surveyed for the same purpose.

There is value in student perceptions, but they also are likely to present an incomplete picture for most outcomes. Students are sometimes not very good judges of their own abilities. In addition, they may not understand what important aspects of a discipline they may be missing. This reality is particularly evident if the outcome is at a higher cognitive level than that at which the student is operating. For these reasons, a complete assessment of outcomes requires the second major class of assessment activity—expert judgment of student products.

Assessment of programmatic outcomes adds some interesting new wrinkles. Essentially, two elements are needed: student products that allow the inference of specific competencies or lack thereof, and experts who can view these products and assess the competence shown. Student products, be they test responses, papers, or major projects, etc., are best assigned and collected in the context of an actual graded class. Otherwise, problems in student motivation render the data suspect. (Does the student really know this little or did he/she put no effort into it?)

Two questions will arise. First, do the current curriculum and course assignments provide the needed student products? In other words, are students getting regular opportunities to demonstrate ability in the outcome areas? Often, the type of work we need for analyses comes from capstone courses that ask students to integrate and use their learning in the major. The need to assess these outcomes may indicate a need for different assignments, tests, or coursework.

The second question is who should judge the extent to which outcomes are being attained? Often the instructors of specific classes may be appropriate. In other cases, the perspective of a single faculty member in a single course may be too narrow. Rather, it might be appropriate to bring a faculty committee together to read a sample of student papers, or perhaps a collection of student portfolios, reflecting work over several courses or the entire major program.

Ways of Assessing Learning Outcomes - Specific Techniques (Adapted from diverse sources)

A number of techniques that might be useful for assessing student learning outcomes are listed below:

Secondary analyses of course papers. The instructor will read student papers in order to assign a grade. If expected course-level student outcomes, the assignment, and grading criteria are aligned, then this reading also will provide a measure of student learning outcome attainment in the course. Faculty committees can also read these same papers to assess the attainment of discipline or program-level student learning outcomes. In most cases, this second reading should be done by other than the instructor or by others along with the instructor, as the purpose for the assessment is different. Scoring rubrics for the papers, based on the relevant student learning outcomes can be developed in advance or as the papers are being read.

Secondary analyses of course projects. Products other than papers can also be assessed for attainment of discipline or program-level student learning outcomes. For example, if students are required to give oral presentations, other faculty and even area professionals can be invited to these presentations and can serve as outside evaluators.

Capstone courses. Capstone courses provide a wonderful occasion for obtaining data on student learning. This is simply because the capstone course is the place where students are most likely to exhibit their cumulative understanding and competence in the discipline. Indeed, the purpose of many capstones courses is just that - providing an opportunity for students to “put it together”. Products of capstone courses should be, by their very nature, places where students demonstrate understandings and abilities articulated in the program or department student learning outcomes.

Student portfolios. Having students collect all or some of the work they have done in a major will provide a much richer and well-rounded view of student learning than single documents can provide. These portfolios become valuable for programmatic assessment, but they are valuable for the student as well. The richness of portfolios is also their Achilles’ heel. The amount of data can be overwhelming and specific ways to view them need to be developed.

Videotapes of performances. In some areas, such as drama or music performance, analyses of videotapes of performances may be a useful tool. These videotapes are particularly useful if they include a student’s early and later performances.

Examinations. Many course-level student learning outcomes can be assessed by examinations given within the course. In some cases these student learning outcomes will be identical to those at the programmatic level and, thus, the exam questions will cover both. With some creativity, exam questions can also be written to cover broader discipline or programmatic student learning outcomes without losing their validity for course grading. In departments without a capstone courses, it might be possible to write a coordinated set of exam questions that provide a fuller picture when administered across courses.

Standardized and certification exams. In some disciplines, national standardized or certification exams exist that might be useful. However, it is important to note that these exams will be useful only so far as they reflect the department’s student learning outcomes. If, for example, an important goal is to prepare students for entry into a profession that requires passing a certification exam, then students’ performance on such an exam is very relevant. If, on the other hand, a national standardized test does not embody the discipline or department’s particular goals, its results will be irrelevant to the discipline or department.

Exit interviews or surveys. Students’ self-assessment of their learning can be valuable for the student and for the program. Feedback should be anonymously given if at all possible.

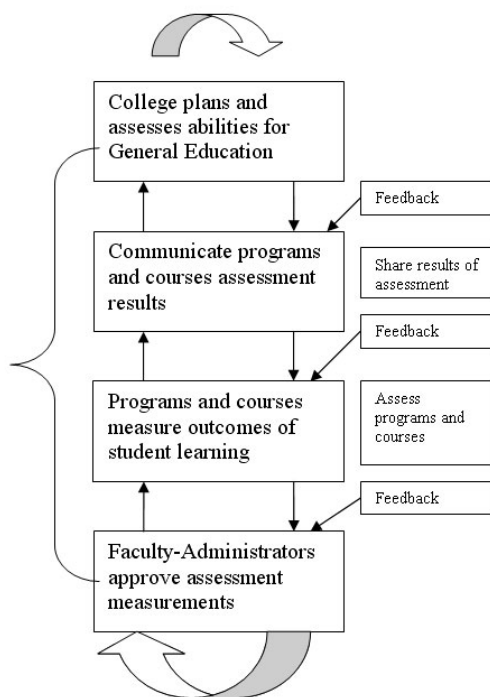
Surveys of alumni. Alumni have the added perspective of the workplace or further education. It is a perspective well worth tapping.

Surveys of employers. If the program is preparing students for a particular set of jobs, it might be worthwhile to survey employers regarding the students' on-the-job performance. However, it is important to survey those who would have first-hand knowledge of particular students rather than relying on general opinions or stereotypes.

Transfer student's performance. One indicator of success in General Education is the academic attainment of transfer students. Setting up a follow-up system for first year GPA may provide useable and useful outcomes measurements.

Internship evaluations. If the department has a number of students who are doing relevant internships or other work-based learning, standard evaluations by sponsors may provide data on attainment of student learning outcomes. In addition, when departments exercise control over the content of internships, those settings themselves can serve as capstone experiences where students can demonstrate their learning.

Figure 6. TMCC Conceptual Assessment Planning Chart



This model makes assessment and the use of results a shared responsibility at TMCC. Feedback is intrinsically built into the system.

DEVELOPING A DISCIPLINE OR DEPARTMENTAL ASSESSMENT PLAN

When developing and implementing outcomes assessment strategies, academic units should have at least one of three purposes in mind: to improve, to inform, and to prove. The results from an assessment process should provide information which can be used to determine whether or not intended outcomes are being achieved and how the programs

can be improved. An assessment process should also be designed to inform discipline or departmental faculty and other decision-makers about relevant issues that can impact the project and student learning.

When developing assessment programs that measure student learning, faculty often ask, "Aren't course grades a satisfactory measure of student performance?" Course grades are one source of information about student achievement. But there are significant short-comings for basing assessment of student learning solely on course grades. A traditional letter grade may suggest how much, and perhaps how well, individual students have learned the prescribed information being tested on that particular exam, but the grades, either singly or in combination, do not necessarily reflect the role of that test in the context of the overall discipline or departmental objectives for the major. A different view, such as one or more of the suggested assessment methods, will help to focus on the overall objectives. Professor Ellis Antunez observed "the grades are for the students to know how they did. The assessment results are for the faculty to know how well she or he did." (fall 2004)

What is the educational purpose of the assessment plan?

A discipline or department's student learning outcomes serve as the foundation for assessment planning. Program assessment is intended to provide information on how well students are performing relative to the student learning outcomes established by the program. The defined outcomes should be comprehensive for the discipline or department. In most instances, not all of the outcomes can be adequately assessed for student achievement. However, assessment plans should be devised to assist faculty in determining whether students are acquiring some of the prescribed learning outcomes.

Guide to develop assessment plan within the discipline or the department:

Developing a program-specific plan to meet assessment objectives is not an easy process. The following steps can help academic units develop effective plans for assessing student learning.

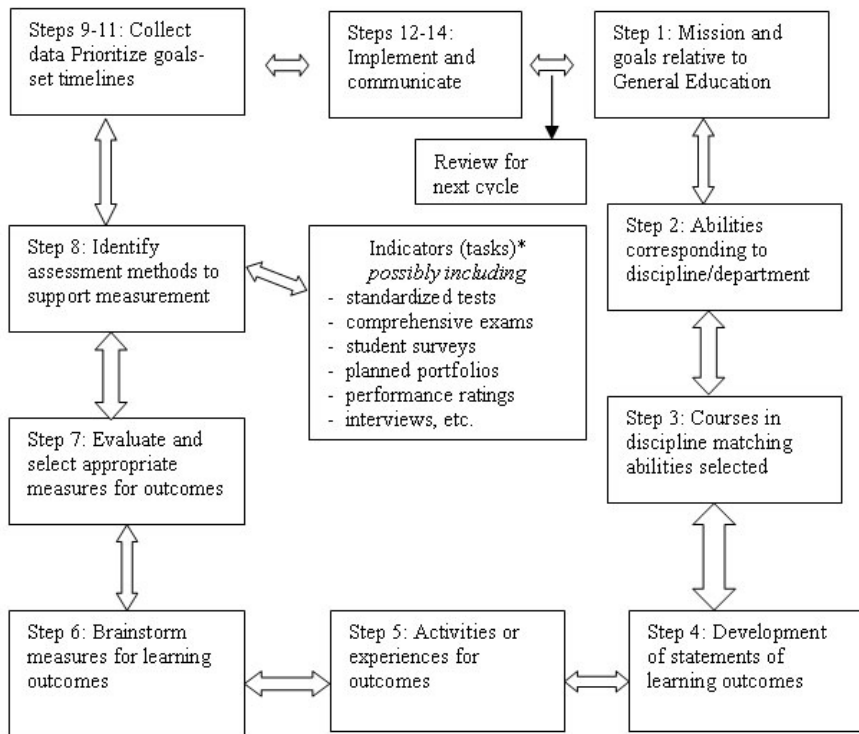
By following these steps, the complexities associated with developing effective and efficient assessment plans, especially for those devising assessment strategies for the first time, can be made less arduous and time consuming.

1. Agree on your mission and goals for the discipline or department reflecting the General Education mission and goals. Disciplines with one faculty should cooperate with like disciplines or interact with colleagues from other institutions.
2. Identify what abilities from the nine measure up to your discipline or department.
3. Identify the courses that match which abilities.
4. Develop statements for student learning outcomes appropriate for your discipline or department.
5. Identify related activities for each learning goal if possible, as well as experiences for students.
6. Brainstorm appropriate measures: The potential for assessment of an outcome may not be immediately evident or possible.
7. Evaluate and select measures including standards and levels of performance for each measure.
8. Identify appropriate assessment methods.
9. Develop a plan for collecting data.
10. Prioritize goals.

11. Set timeline, milestones: These may be influenced by assessment reports timeline and Program and Discipline Review process.
12. Implement Assessment plan.
13. Use data to improve processes.
14. Communicate results.

Steps for Designing Learning Outcomes and Assessment

Figure 7. Step-by-Step Guide Chart



* Diamond, R.M. (1998)

Conclusion

As you continue to develop and strengthen program and course learning outcomes, think about strategies for changes in the curriculum, faculty development, and out-of-class learning experiences. During the spring 2005 semester, the critical work at TMCC was to establish outcomes for all courses. This was an opportunity to revise programs and courses and to hold conversations with colleagues that help illuminate the commonality of pedagogical experiences and help to inform and interrelate the experiences of all students to common intellectual experiences.

Higher education institutions struggle with two issues related to General Education: designing a coherent curriculum linked to goals, and assessing General Education. The 2000 survey of Chief Academic Officers showed that only 38% agreed that their institutions' curriculum is a coherent sequence. Furthermore, only 32% of the responding institutions were assessing General Education. While the percentage is below average, it shows substantial activities and it shows a need for the academy to strengthen efforts in assessing General Education. It would appear that any such effort hinges on several factors, among which are:

- Faculty engagement
- Faculty leadership
- Administrative leadership
- Expansion of scholarship in the area of learning outcomes
- Building on current successes

We invite our colleagues to join in and make the assessment of General Education not just the fulfillment of another mandate, but a meaningful intellectual activity aiming at improving the learning process for all students at TMCC.

A P P E N D I X 1

ACADEMIC AFFAIRS

Curriculum Review

PROGRAM AND LOGISTICS FOR JANUARY 11 AND 12, 2005*

Note: Except for the general session, all others are suggestions only and may be changed by the Academic Deans.

This is an outline of the process the college used to review General Education during the spring 2005 semester.

Materials/work to accomplish:

General Education:

- Objectives for each course (if necessary)
- Abilities for each course (no more than 3)
- Emphasis for each course (General Education designation)
- Learning outcomes for each course
- Measurement outcomes for each course
- Revised course description (if necessary)

Career Programs:

- Objectives for each course (if necessary)
- Abilities for each program chosen from the nine approved abilities (specify degree and certificate)
- Learning outcomes for each course
- Measurement outcomes for each course
- Program outcomes and assessment plan reviewed and revised (if necessary)
- Revised course description (if necessary)

**January 11 ended up being a snow day. The two days were condensed into one day-January 12.*

Career Program Group: Groups will be formed by programs and led by the chair-director-coordinator and the dean.

Members of SLOA will support the dean and the chair or the director. The following activities may take place:

- The department or the program will review the General Education mission-goals and abilities and discuss them in the context of the general expectations for students in the program from a General Education perspective and the skills they believe are pertinent to their industries.
- Based on the General Education goals and the nine approved abilities, degrees and certificates will choose the abilities and the goals of General Education for their programs. This will be done without reference to the General Education courses corresponding to the abilities. Together with their original goals and competencies, they'll make up their list of competencies. The number of selected abilities will be dependent upon the program. Some career courses may meet the abilities without being considered a General Education course: liberal education. At a minimum all degrees and certificates will meet the abilities of: analytical and thinking skills; communication skills; collaborative skills; quantitative and scientific reasoning skills; and global and cultural awareness skills.

- The program will divide the faculty into groups (depending on the size of the program) to work on specific courses to: revise course description if necessary, revise objectives if necessary, develop learning outcomes, and develop measurement for each outcome.
- Each program will review its existing Program Outcomes.

The SLOA Committee provided leadership for a thorough review of the TMCC curriculum. This review was to have been launched on January 10, 2005, but had to be moved and condensed into one day, January 12, 2005. Each department or program gathered and divided up in appropriate sub-groups. The suggested activities for that day are listed above.

GENERAL EDUCATION AND CAREER PROGRAMS

Closing the loop and completing the work

- Report of the work done will be formalized on appropriate forms and returned to the department chairs and deans. Each dean and department chair may establish a deadline to meet the requirement of submission to the Office of the Vice President for Academic Affairs. The deadline to submit to VPAA is February 15, 2005 for work completed in January.
- All reports on appropriate forms-word processed and signed by the appropriate person (director-chair or dean). The deadline to submit forms to the Curriculum Committee is May 2005.
- The reports will constitute the proposal to the Curriculum Committee to evaluate the fitness of each course into the General Education curriculum. The Faculty Senate will also provide its feedback and evaluation of the curriculum through the College Curriculum Committee by the end of May 2005.
- Upon approval of the courses, the Office of the Vice President for Academic Affairs will prepare a matrix and discuss it with appropriate departments and divisions for completeness and or areas of concerns for the curriculum. This will be accomplished during summer 2005
- Submission for the catalog summer 2005.

Note: The implementation date for the new or revised General Education Curriculum is fall 2006 to allow departments to finish their work and to provide ample time for publication of the curriculum. Departments and disciplines are encouraged to prioritize the courses to be reviewed for this process. Future courses will be reviewed through the regular curriculum approval process.

A P P E N D I X 2

GLOSSARY OF GENERAL TERMS RELATED TO OUTCOMES AND ASSESSMENT

(Adapted from several sources)

ACTION PLANS:

The statement that indicates the specific changes that a given area plans to implement in the next cycle based on assessment results.

ADMINISTRATIVE OBJECTIVES

The intended results that demonstrate the effectiveness of an administrative, or support, entity on campus. This is articulated as a general statement.

ASSESSMENT

The process of judging student behavior or product in terms of some criteria (Clark, 1975). It includes various means of gathering information about the quantity, quality and progress of students, their performance/studio and academic work. Assessment may include objective tests as well as the use of rating scales, observation checklists, content analysis, interviews based on performances, discussions and written assignments. See also Outcomes Assessment.

ASSESSMENT CYCLE

The assessment cycle in higher education is generally annual and fits within the academic year. An example could be outcomes, targets and assessment tools are established early in the fall semester, data is collected by the end of spring semester, results are analyzed during the summer and early fall.

ASSESSMENT RESULTS

The data/information acquired from the implementation of the assessment tool.

ASSESSMENT TOOL

An instrument that has been designed to collect objective data about students' attitudes and skill acquisition. An appropriate outcomes assessment test measures students' ability to integrate a set of individual skills into a meaningful, collective demonstration. Some examples of assessment tools include standardized tests, end-of-program skills tests, student inquiries, common final exams, and comprehensive embedded test items. See also Course Embedded Assessment.

BENCHMARK

A description or example of candidate or institutional performance that serves as a standard of comparison for evaluation or judging quality.

BLOOM'S TAXONOMY OF COGNITIVE OBJECTIVES

Six levels arranged in order of increasing complexity (1=low, 6=high):

1. **Knowledge:** Recalling or remembering information without necessarily understanding it. Includes behavior such as describing, listing, identifying, and labeling.
2. **Comprehension:** Understanding learned material and includes behaviors such as explaining, discussing, and interpreting.
3. **Application:** The ability to put ideas and concepts to work in solving problems. It includes behaviors such as demonstrating, showing, and making use of information.
4. **Analysis:** Breaking down information into its component parts to see interrelationships and ideas. Related behaviors include differentiating, comparing and categorizing.
5. **Synthesis:** The ability to put parts together to form something original. It involves using creativity to compose or design something new.
6. **Evaluation:** Judging the value of evidence based on definite criteria. Behaviors related to evaluation include: concluding, criticizing, prioritizing, and recommending.

COURSE EMBEDDED ASSESSMENT

Reviewing materials generated in the classroom. In addition to providing a basis for grading students, such materials allow faculty to evaluate approaches to instruction and course design.

DIRECT MEASURES OF LEARNING

Students (learners) display knowledge and skills as they respond directly to the instrument itself. Examples include: objective tests, essays, presentations, and classroom assignments. See also Indirect Measures.

GENERAL EDUCATION ASSESSMENT

Assessment that measures the college-wide, General Education abilities agreed upon by the faculty. General education assessment is more holistic in nature than program outcomes assessment because competencies or abilities are measured across disciplines, rather than just within a single discipline. Some common General Education abilities include analytical thinking skills, communication skills, collaborative skills, quantitative and scientific reasoning skills, global and cultural awareness skills, personal, social and civic responsibility skills, information literacy and research skills, artistic and aesthetic awareness skills, and computer and information technology skills.

GOAL

A broad, general statement which may include the philosophical base that underpins a unit of study.

INDIRECT MEASURES

Indirect methods such as surveys and interviews ask students to reflect on their learning rather than to demonstrate it.

INTENDED STUDENT OUTCOMES

The resulting skills or knowledge that faculty intend students to acquire as a result of enrolling and completing a course.

LEARNING OUTCOMES

A statement of what a learner is expected to know, understand or be able to do as a result of a learning process. Observable behaviors or actions on the part of students that demonstrate that the intended learning objective has occurred. Learning outcomes may also be defined as operational statements describing specific student behaviors that evidence the acquisition of desired knowledge, skill, abilities, capacities, attitudes or dispositions. Learning outcomes can be usefully thought of as behavioral criteria for determining whether students are achieving the educational objectives of a course or program, and, ultimately, whether overall program goals are being successfully met. Outcomes are sometimes treated as synonymous with objectives, though objectives are usually more general statements of what students are expected to achieve in a lesson or unit of study.

MEASUREMENT

The level-breadth or depth of performance expected of a student or a group of students, or a class or classes: accuracy, quantity, time constraints, etc.

METHODS OF ASSESSMENT

Techniques, models or instruments used in assessment.

OBJECTIVE

Precise statements which specify the performance or behavior a student is to demonstrate relative to a knowledge or skill. Objectives typically relate to lessons or units, not “big ideas” such as described by an outcome.

OUTCOME

See Learning Outcomes.

OUTCOMES ASSESSMENT

The determination of a value based on an intended outcome, or result, of an activity. Information, or data, that is used to determine how to adjust what it is that we do in order to achieve the intended results. Outcomes assessment is often described as the tool faculty and staff use to fine tune their craft of teaching, serving students, etc. See also Assessment.

PERFORMANCE ASSESSMENT

The process of using student activities or products, as opposed to tests or surveys, to evaluate students' knowledge, skills and development. Methods include: essays, oral presentations, exhibitions, performances, and demonstrations. Examples include: reflective journals (daily/weekly); capstone experiences; demonstrations of student work (e.g. acting in a theatrical production, playing an instrument, observing a student teaching a lesson); products of student work (e.g. Art students producing paintings/drawings, Journalism students write newspaper articles, Geography students create maps, Computer Science students generate computer programs, etc.).

PORTFOLIO

An accumulation of evidence about individual proficiencies, especially in relation to learning standards. Examples include but are not limited to: Samples of student work including projects, journals, exams, papers, presentations, videos of speeches and performances.

QUALITATIVE METHODS OF ASSESSMENT

Methods that rely on descriptions rather than numbers. Examples: Ethnographic field studies, logs, journals, participant observation, and open-ended questions on interviews and surveys.

RELIABILITY

Reliable measures that produce consistent responses over time.

RUBRICS

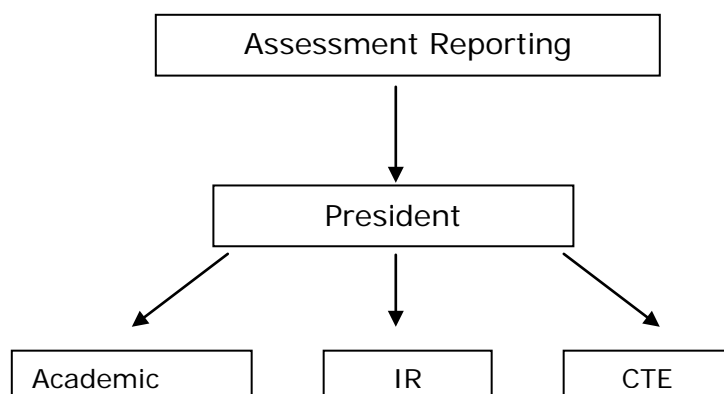
Rubrics are usually set on a point scale and each number represents a specified level of a quality of a given aspect of the work being assessed. Rubrics can also be defined as Scoring guidelines that are written and shared for judging performance that indicate the qualities by which levels of performance can be differentiated, and that anchor judgments about the degree of achievement.

APPENDIX 3

RESPONSIBILITIES FOR ASSESSMENT AT TRUCKEE MEADOWS COMMUNITY COLLEGE: SHARED ACCOUNTABILITY

Effective in the fall of 2004, TMCC has divided the responsibility for assessment as outlined in the chart below. This division fits the current organizational structure. It will be reviewed as necessary as a part of the assessment of the TMCC planning process and evaluation of the Outcomes and Assessment plan led by SLOA. The three aspects will work together and hold permanent membership to the Student Learning Outcomes and Assessment (SLOA) committee. They are jointly accountable to SLOA and to the president of the college.

Academic Affairs: Deans, VP, Chairs, Faculty	Office of Institutional Research	Center for Teaching Excellence
Philosophy and general direction: Chairs SLOA	Consultation for faculty on methods of assessment	Consultation for faculty on best practices
Development: Outcomes-personnel-support-research institutional best practice	Supporting assessment activities: Surveys, pre- and post-tests, etc.	Scheduling workshops: campus and others
Follow-ups w/departments, programs and disciplines	Analysis: Assist faculty and administrators with data interpretation and analysis of results of assessment activities	Assist individual faculty with pedagogical changes to implement changes suggested by assessment results
Resources needed to promote outcomes and assessment: Travel, literature, speakers, etc. Reports: The Deans' office will coordinate and contribute to the Annual Assessment Report	Reports: The IR office will contribute to the Annual Assessment Report by reporting on IR activities related to outcomes and assessment.	Reports: The CTE will contribute to the Annual Assessment Report by reporting on CTE activities related to outcomes and assessment.
Academic Assessment: Programs, disciplines, courses, and General Education	Institutional Effectiveness: Alumni Research Campus-wide Surveys External Reporting	Not applicable



A P P E N D I X 4

SAMPLES OF LEARNING OUTCOMES STATEMENTS AND MEASUREMENTS

MTL 163B

Developed by Mr. Jim New, Interim Associate Dean for Applied Industrial Technologies and Mr. John Septien, Professor of Welding.

Safety

Learning Outcome: The student will show that he/she can use equipment and protective gear safely in the shop environment without the need for supervision.

Measure: The instructor will monitor the student's use of the welding and cutting equipment on a continuous basis and evaluate progress.

Technique/Materials

Learning Outcome: The student will be able to achieve a continuous welding puddle without filler rod, brazing puddle, and welding bead for a given material and purpose.

Measure: The chosen technique will be evaluated for proper procedure and application. The resulting weld puddle or bead will be compared to a standard made by the instructor and assessed for proper width and weld conformity.

Design

Learning Outcome: Student will be able to apply principles of good design to sculpture projects.

Measure: Projects will be evaluated for application of various design principles, such as symmetry, proportion, and balance; and appropriate welding techniques to achieve the intended results.

MTL 263

Developed by Mr. Jim New, Associate Dean for Applied Industrial Technologies and Mr. John Septien, Professor of Welding.

Safety

Learning Outcome: The student will continue to show proficiency in the safe handling and use of all welding and cutting equipment without the need for instructor supervision.

Measure: The instructor will monitor and evaluate the progress of the students while they operate the equipment in the shop environment.

Technique/Materials

Learning Outcome: The students will be able to show proficiency with Oxy-Fuel and GMAW (gas metal arc welding) process throughout the class time frame as they develop and work on their metal sculpture.

Measure: The proper process will be chosen by the student and evaluated by the instructor to determine the efficiency and correct application of the process. A standard, made by the instructor, will be used as a gauge to compare the students work.

Design

Learning Outcome: The student will be able to utilize information gained in this class and the MTL 163B class to further develop gallery quality metal sculpture.

Measure: Completed sculpture will be critiqued by the instructor and possibly invited guest artists/sculptors for line, shape, form and movement. Applied welding techniques and processes will also be noted and judged for correctness of application and use.

Biology 188B

Developed by Dr. Jamie Campbell, Professor of Biology and Curriculum Committee Chair

Learning Outcome: Students will be successful in Biology 190.

Assessment: Track grades of students who successfully complete Biology 188B and continue in Biology 190 and when possible, survey these students as to the usefulness of Biology 188B in this context.

NRS 210

Developed by Ms. Virginia Rivers, Professor of Biology/Environmental Science

Learning Outcome: The student will critique scientific research papers that analyze environmental degradation of the lithosphere, biosphere, hydrosphere or atmosphere.

Measure: The student will submit reports of their critiques. The class average will not be below 70%.

Learning Outcome: The student will read and analyze a broad selection of documents from texts and periodicals relating to the issue of world population and how it affects pollution.

Measure: The student will submit written position papers on the assigned reading. The class average will be at 70% or above.

Learning Outcome: The student will become familiar with basic toxicology concepts as they affect, for example, the production and processing of food crops.

Measure: Class debates about the pros and cons of organic vs. traditional chemical farming and how these two divergent methods contribute to the overall pollution problem in our society.

Learning Outcome: Categorize all pollutants common in industrialize countries, and what methods are best for alleviating the wide use and/or health problems caused by these pollutants.

Measure: Oral presentations of positions on pollutant use and pollutant control by government agencies. Class average on presentations will be at 70% or above.

Learning Outcome: Evaluate the seriousness of global warming, its causes, and its implications for the Planet.

Measure: Oral presentations of positions on this issue will be given in class. Class average on presentations will be at 70% or above.

Learning Outcome: Become familiar with local and regional issues relating to solid and hazardous waste.

Measure: Write essay responses to examination questions relating to the Yucca Mountain issue.

Learning Outcome: Evaluate the effects of energy use on pollution in a given geographic area, such as the greater Reno-Sparks urban area.

Measure: Express orally or in written form, the connection between energy use and pollution, and the effects of counter measures such as recycling and conservation. Oral presentation and exam scores will be 70% or higher.

ENG 107 Technical Communications I

Developed by Ms. Cheryl Cardoza, Instructor of English and SLOA member

Learning Outcome: Students will be able to produce clear and practical writing on their assignments.

Measure: On their written memos, letters, reports, proposals, and PowerPoint presentations, students will demonstrate an average score of 80% or higher on the quality of writing for all assignments.

Learning Outcome: Students will be able to use the appropriate forms for technical communications

Measure: On their written memos, letters, reports, proposals and PowerPoint presentations, students will demonstrate a clear understanding of the required form by earning an average score of 80% or higher on the format assessment for all assignments.

Learning Outcome: Students will be able to conduct and use researched information as support.

Measure: On the final project for the course, 80% of the students will use field, web, and traditional research as supporting evidence by properly using sources in the text of the report(s) and in a List of References at the end of the report following the appropriate style guide for their discipline.

NURSING 211

Developed by Dr. Ellen House, Professor of Nursing

Learning Outcome: Using the materials and directions outlined in class, the student will read, interpret, and communicate in writing and verbally, three key concerns of two major cultural or ethnically diverse populations utilizing health care in the United States.

Measure: 90% of the students enrolled in the class will achieve 75% or higher on the term paper and group presentation.

Learner Outcome: The student will demonstrate an understanding of diverse viewpoints of health and illness and how to incorporate personal value systems when caring for clients from diverse backgrounds.

Measure: 90% of the students enrolled in the course will receive a final course grade of 75% or higher.

Learner Outcome: The student will develop a list of available resources related to cultural diversity, health care issues and nursing care that will be shared with peers, co-workers or others interested in developing cultural awareness and competence.

Measure: 90% of the students enrolled in the course will submit a bibliography for the paper and group project with a minimum of five diverse resources.

RT 128B: Imaging Equipment

Developed by Mr. Warren Hejny, Professor of Radiology Technology

Learning Outcome: Using worksheets and end of the chapter questions, the student will be able to problem solve using mathematics and logic to describe the brightness gain of fluoroscopic equipment.

Measure: The student will be graded on worksheet problems, end of chapter questions, and evaluated with quizzes and a test.

Learning Outcome: Using materials and directions presented in class, the student will be able to describe and explain how equipment in the radiography department works.

Measure: The student will be graded on worksheets, end of the chapter questions and evaluated with quizzes and a test.

Learning Outcome: The student will be able to demonstrate their knowledge of radiographic equipment (computed radiography, fluoroscopy, and tomography) and how it has evolved over the past century.

Measure: The student will demonstrate this knowledge from worksheets, end of chapter questions, quizzes and a test.

Learning outcome: Using knowledge obtained from the course and directions presented in class, the student (in a group project) will present an oral presentation on the equipment needed for a radiographic room.

Measure: The instructor will critique the student's presentation for correctness of content, interpretation of facts and degree of involvement in the group project.

Learning Outcome: Students will identify different radiographic components, how they operate and the advantages and disadvantages of radiographic components.

Measure: 80% of the students will achieve 75% or better on a written or oral test designed to identify the different radiographic components.

Learning Outcome: Students will differentiate between conventional fluoroscopic units and Image intensifiers (II), the uses for components of image intensifiers/fluoroscopic units and solve mathematic problems relating to fluoroscopy.

Measure: 80% of the students will achieve 75% or better on a written or oral test designed to identify II and fluoroscopic components, their uses, and mathematical problems associated with fluoroscopy.

Learning Outcome: Students will demonstrate knowledge and describe advantages and disadvantages of computed radiography (CR) and digital radiography (DR) and determine appropriate parameters for diagnostic images.

Measure: 80% of the students will achieve 75% or better on a written or oral test on CR, DR, their advantages and disadvantages, and acquiring diagnostic images from these modalities.

Learning Outcome: Student will demonstrated the basic understanding and purpose of tomography, principles of tomography, affect of amplitude on the image, and types of movement utilized for tomography.

Measure: 80% of the students will achieve 75% or better on a written or oral test designed to identify tomographic principles, amplitude, and movement in tomography.

RT 118B: Radiology, Physics and Circuitry

Developed by Ms. Deborah Baker, Professor of Radiology Technology

Learning Outcome: Using worksheets and end of the chapter questions, the student will be able to problem solve using mathematics and logic to demonstrate understanding of the atomic structure, x-ray transformers, and rectification of x-ray equipment.

Measure: The student will be graded on worksheet problems, end of chapter questions, and evaluated with quizzes and a test.

Learning Outcome: Using information and directions presented in class, the student will be able to describe how x-rays are produced and predict the effect of changes in mA, kVp, filtration, and anode atomic number on the emission spectrum.

Measure: The student will be graded on worksheets, end of the chapter questions and evaluated with quizzes and a test.

Learning Outcome: Using worksheets and end of the chapter questions, the student will be able to demonstrate knowledge of the x-ray machine circuitry (to include primary circuit, secondary circuit, filament circuit, and x-ray tube construction), the x-ray production efficiency, and how to lengthen the life of the x-ray tube.

Measure: The student will demonstrate this knowledge from worksheets, end of the chapter questions, quizzes and a test.

Learning Outcome: Using knowledge obtained from the course and directions presented in class, the student (in a group project) will produce a schematic of the x-ray circuitry and present an oral presentation on the importance of each section to the production of x-rays.

Measure: The instructor will critique the student's presentation for content, accuracy, interpretation of facts and degree of involvement in the group project.

A P P E N D I X 5

CURRICULUM REVIEW FORMS

The following forms are included in this appendix:

- Career Program Abilities: Student Learning Outcomes and Assessment
- Spring 2005 Curriculum Review Form: Career Courses/Non-General Courses
- Spring 2005 Curriculum Review Form: General Education

A P P E N D I X 6

MEMBERSHIP OF SLOA-ACADEMIC YEAR 2004-2005

The following individuals representing academic and support divisions and departments form the membership of SLOA.

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English
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 Humanities
 Social Sciences
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 Architecture and Engineering
 Computer Technologies
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- Bill Gallegos, Chair and Professor of Mathematics
- Dan Adams, Quest Coordinator and Professor of QUEST

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- Neil Siegel, Librarian
- Charlotte Cox, Center for Teaching & Learning
- Pam Hawkins, Administrative Assistant

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